Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Deployment of Wireline Services Offering	)	CC Docket No. 98-147
Advanced Telecommunications Capability	)	
	)	

COMMENTS OF COVAD COMMUNICATIONS COMPANY

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TABLE OF CONTENTS

SUMMARY

Section 706 requires that the Commission encourage the deployment of high-speed, switched, broadband telecommunications capability. In the last few years, the capabilities of high speed packet switched networks have shown unprecedented exponential growth. To understand why this capability has yet to reach individual consumers and small businesses, one should appreciate the differing world views of (1) the established, legacy, circuit-switched companies with a public switched telecommunications network focus (the "Bellheads"), and (2) the emerging packet-switched companies that are Internet oriented and focused on computer-related communications (the "Netheads").

In Section I, Covad describes the difficulties it has experienced entering the market as a packet-switched CLEC. ILECs have sought to delay Covad's market entry and raise its costs through their anti-competitive collocation and local loop practices.

Section II discusses Covad's proposals that would remedy these abuses. Covad proposes national minimum standards for collocation and for digital-capable local loops. These requirements will limit the ability of incumbent LECs to use their control of essential elements to stifle competition for advanced telecommunication services. Covad articulates the importance that CLECs be provided "parity of opportunity" in providing advanced services. Covad also provides comments on the Commission's "separate affiliate" proposal and cautions against premature granting of "limited" interLATA relief to RBOCs that may be resisting or delaying implementation of new collocation and DSL-loop unbundling rules. Covad encapsulates its policy recommendations into a set of draft rules (Attachment 4).

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COMMENTS OF COVAD COMMUNICATIONS COMPANY

The bold steps taken and proposed by the Federal Communications Commission in this proceeding are landmark in nature. Throughout the *Advanced Services NPRM*,[1] the Commission emphatically recognized that the unbundling and collocation principles of Section 251 are evolutionary and therefore well-suited to the advanced telecommunications network of the future. The Commission has ratified Congress's dynamic vision of this industry, characterized by rapid technological change and potential innovation. The Commission has forged ahead to ensure that *all* Americans receive the benefits of a *competitive* market for advanced telecommunications services. To paraphrase Winston Churchill, the Commission's initial unbundling and collocation rules[2] were only the end of the beginning, not the beginning of the end.

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[1] *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147 *et al.*, Memorandum Opinion and Order and Notice of Proposed Rulemaking, FCC 98-188 (rel. Aug. 7, 1998) ("*Advanced Services NPRM"* or "*NPRM*").

[2] 47 C.F.R. Part 51; *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, First Report and Order, 11 FCC Rcd 15499 (1996) ("*First Local Competition Order*"), *aff'd in part and vacated in part sub nom. Competitive Telecommunications Ass'n v. FCC*, 117 F.3d 1068 (8th Cir. 1997), *aff'd in part and vacated in part sub nom. Iowa Utils. Bd. v. FCC*, 120 F.3d 753 (8th Cir. 1997), *cert. granted*, 66 U.S.L.W. 3484 (U.S. Jan. 26, 1998).

Covad Communications Company ("Covad") strongly supports these initiatives. As a start-up telecommunications company focused *entirely* upon deployment of competitive xDSL services nationwide, Covad urges the Commission to issue final rules in this proceeding with dispatch, because the incumbent LEC practices at issue in this docket are currently slowing Covad's (and similar CLECs') deployment of these advanced services to American households and businesses. The Commission *can* achieve the goals of Section 706 by taking appropriate market-opening and incentive-based steps suggested by the *Advanced Services NPRM*.

Covad is encouraged that the Commission and the Administration have both recognized that the purpose of Section 706 is to promote the provision of advanced services to all Americans on a *competitive* basis. Therefore, before embarking on a discussion of the Commission's specific proposals and questions, these Comments begin with a short discussion of the specific problems that Covad has experienced to date in obtaining physical collocation and unbundled DSL-capable loops with different ILECs across the country. The clear conclusion is that national requirements and prompt, forceful Commission action are necessary if competitive advanced services are to become available to all Americans in a reasonable and timely fashion.

I. PROLOGUE: WINNING THE WAR OF ATTRITION

A. Netheads and Bellheads

The Commission and Section 706 of the 1996 Act must bridge the gaping rift present in communications network design today—epitomized by the debate between

"Netheads" and "Bellheads."[3] In the last several years, it has become clear the Netheads are winning technologically. Computing performance doubles every 18 months, and data communications networks increase their efficiency in an arithmetic manner, while the efficiency of traditional, landline circuit-switched networks increase only marginally.[4] However, the Bellheads are waging a war of regulatory attrition that thwarts implementation of Section 706. Indeed, Bellhead bureaucracy, attitudes and policies retain control over the essential facilities that stand in the way of advanced broadband services to all Americans—the "last mile" local loop and central office facilities.[5]

CLEC-ILEC battles over unbundling and collocation as they relate to deployment of xDSL services *must* be seen in the light of the ongoing Nethead-Bellhead schism, in all its dimensions—psychological, technological, and regulatory. ILEC resistance to the unbundling of DSL-capable loops[6] and to alternative physical collocation options share a common lineage with the Bellhead mental construct of centralized command and control, implemented by an inflexible bureaucracy. Indeed, the Bellhead "one network" mentality (clearly evident in the RBOC 706 Petitions) descends directly from the

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[3] *See* Steve G. Steinberg, "Netheads vs. Bellheads," *Wired 4.10*, October 1996, http://www.wired.com/wired/4.10/features/atm.html.

[4] Paul Johnson, "The Telecom Revolt: Adopt the Internet or Die!", *Forbes ASAP*, Oct. 5, 1998 at 132 ("Users are demanding bandwidth and bandwidth-intensive services. They want to do new things and are pushing carriers to support new services. Do carriers have a choice? No. The revolution has begun. . . . It is not about the convergence of voice and data on the traditional network, it is about building new, broadband, packet-based networks. It's about survival.").

[5] *Advanced Services NPRM* at ¶ 8 ("If all Americans are to have meaningful access to these advanced services, however, there must be a solution to the problem of the 'last mile.'").

[6] Recently made abundantly clear in SBC and Bell Atlantic's petitions for reconsideration of the August 7, 1998 Memorandum Opinion and Order in this docket.

imperial, pre-divestiture Bell System.[7] That mentality is evidenced by a stubborn aversion to change and to the cannibalization of existing, cross-subsidized revenue streams. Nethead entrants like Covad—whose only goal is to get into business and deploy advanced data communications services as soon as possible—are continually hindered by Bellhead bureaucracy, anti-competitive attitudes and perverse incentives.[8]

It is this context that the Commission must keep in mind when examining both market-opening and incentive-based forms of regulation in this proceeding. In the *Advanced Services NPRM*, the Commission has rightly focused upon several market-opening (strengthened collocation and DSL loop unbundling rules) and incentive-based (structural separation for ILEC DSL) initiatives that could strike at the core of the counter-productive and retrograde Bellhead world view. The Commission must articulate policies that directly address the structural problems inherent in Bellhead control of essential "last mile" assets while ensuring that its final rules do not present opportunities for Bellheads to exploit in their unrelenting war of attrition.

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[7] Paul Baran, one of the inventors of packet-switching, once described AT&T's initial reaction after hearing his 1960s-era proposal for a nationwide, packet-switched network: "Their attitude was that they knew everything and nobody outside the Bell System knew anything. . . . And somebody from the outside couldn't possibly understand or appreciate the complexity of the system . . . It took ninety-four separate [AT&T] speakers to describe the entire system [to me], since no single individual seemed to know more than part of the system. Probably their greatest disappointment was that after all this, they said, 'Now do you see why [a packet-switched network] can't work?' And I said, 'No.'" *quoted in* Katie Hafner and Matthew Lyon, *Where Wizards Stay Up Late: The Origins of the Internet* 62-63 (1996).

[8] *See, e.g.*, Nick Wingfield, "No Mercy: Covad Communications needs the Bells' cooperation to thrive. It says it isn't getting much," *Wall Street Journal*, Sept. 21, 1998 at R10 (stating that the "uneasy" relationship between Covad and ILECs stems is not "just fallout from competition" but is also "a matter of chemistry").

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B. Being a DSL CLEC Today: The Need for National Standards

1. A Collocation in Every Neighborhood

Fundamental (indeed, axiomatic) to the provision of competitive, broadband xDSL services "to all Americans" is the ability for entrants to obtain physical collocation arrangements in *every* incumbent LEC central office. Let there be no mistake—if ILEC gouging artificially raises the cost of obtaining space for xDSL equipment in a central office to over $100,000 (which is often the case) and if ILECs continue to create artificial space scarcities in other central offices, CLECs have no choice but to provide their services only in some densely-populated areas. The promise of competitive xDSL deployment to all Americans—rich and poor, urban and rural, business and household—depends upon the availability of swift, inexpensive and space-efficient physical collocation in central offices that serve every neighborhood.

In Covad's experience, the initial costs of physical collocation should not be more than a few thousand dollars per central office and should not take more than 45 days.[9] Covad developed "cageless physical collocation" to balance the various interests at play in central offices. Covad was the first CLEC to enter into a cageless physical collocation arrangement with an incumbent LEC (U S WEST Communications, Inc. in the State of Washington), but even that breakthrough has been stalled by incumbent recalcitrance and litigiousness.[10] As a result, Covad strongly supports the Commission's proposals for national rules that would require ILECs to reform their physical collocation practices.

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[9] *See* Attachment 1, Affidavit of Thomas J. Regan, Covad Communications Company.

[10] Subsequent to agreeing with U S WEST regarding cageless collocation—an achievement lauded by U S WEST representatives before Congress and the FCC earlier this year—Covad has ordered several cageless arrangements in the State of Washington. However, U S WEST—despite clear contract language and its clear statements to the FCC that it had reformed its collocation practices to accommodate Covad's

2. The ILEC No-Space and Collocation Construction Scam

As the Commission recognized in the *Advanced Services NPRM*, ILECs routinely claim that particular central offices have "no space" for physical collocation. The numbers of such rejections are reaching startling proportions. In Illinois, for example, Ameritech has rejected no fewer than 33% of Covad's several dozen physical collocation applications for "no space" reasons. Covad's experience with Ameritech is similar to its experience with other ILECs that insist upon cage-based collocation.[11]

What is shocking about these "no space" rejections is that they are usually factually incorrect. For instance, in its Comments to the Commission regarding SBC's 706 Petition, Covad documented that Pacific Bell had initially rejected nearly a third of Covad's applications in California for "no space" reasons.[12] After "re-surveys" of these offices, and after Covad filed an antitrust lawsuit and preliminary injunction motion against Pacific with regard to many of these offices, Pacific—surprise, surprise—magically found space in *all* of the San Francisco Bay Area offices that Covad brought to the Court's attention.[13] It seems that where Covad or other CLECs cast light upon

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interests—has unilaterally reneged on its interconnection agreement and *pre-emptively sued* Covad with regard to the rates, terms and charges for cageless physical collocation in those offices. Covad can only view U S WEST's purpose in that litigation as a last-ditch effort to reassert anti-competitive Bellhead control over its central offices.

[11] Central office collocation "cages" are the most expensive chain link fences in the world, and, judging from ILEC delivery schedules, the most difficult and demanding to construct.

[12] Comments of Covad Communications Company in CC Docket No. 98-91, filed June 24, 1998. Space clearly existed in those spaces for xDSL equipment because subsequent to filing its 706 Petition, Pacific filed a tariff with the FCC offering ADSL service from 20 of these ostensibly "no space" offices. Pacific Bell Telephone Company, Pacific Tariff F.C.C. No. 128, Transmittal No. 1986, June 15, 1998, Section 17.5.4. Thus, while Pacific found space in those twenty offices for its own DSL equipment, it was simultaneously claiming that there was no space to collocate Covad's DSL equipment.

[13] Aug. 19, 1998 Order Denying Motion for Preliminary Injunction, *Covad Communications Co. v. Pacific Bell*, No. C98-1887 SI (N.D. Cal.) (noting that SBC had found space in 16 of 20 disputed offices). Subsequent to the Court's Aug. 19, 1998 decision, SBC found space in the remaining four offices.

anticompetitive practices, ILEC's change their behavior, *but only where it has been illuminated.*[14]

Rarely do ILECs change their policies company-wide. For instance, although Covad has negotiated cageless physical collocation from U S WEST in the State of Washington, U S WEST now insists on re-negotiating those terms in other U S WEST states.

Covad's experience with Bell Atlantic is also illustrative. It is widely known that Bell Atlantic is pressing forward to obtain interLATA authority in the State of New York. Not surprisingly, in NYPSC Case No. 98-C-0690, Bell Atlantic has endeavored to "showcase" its physical collocation practices in New York. Bell Atlantic has proudly proclaimed in that docket that space for some form of physical collocation is available in approximately 90% of New York offices, that it has the capability to provide 15-20 collocation arrangements per month in New York, and that its costs for collocation are "economical."[15] However, Covad's experience with Bell Atlantic's actual provision of collocation cages in New York leaves much to be desired—cages are routinely turned over incomplete and functionally unsuited for use.[16]

Even so, Bell Atlantic's collocation policies in other states do not even measure up to low threshold Bell Atlantic has established in New York. In the

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[14] In Massachusetts, within days of the deadline for the state commission's ruling on Covad's arguments for cageless physical collocation in that state, Bell Atlantic miraculously discovered space for cages in several important and ostensible "no-space" central offices, such as the important location of Cambridge, MA.

[15] Bell Atlantic – New York's Brief on Exceptions, *Proceeding on Motion of the Commission to Examine Methods by which Competitive Local Exchange Carriers Can Obtain and Combine Unbundled Network Elements*, NYPSC Case 98-C-0690, filed Aug. 19, 1998 at 3-6.

[16] *See* Attachment 2, Affidavit of John Fogarty, Covad Communications Company.

Baltimore/Washington corridor, nearly 25% of Covad's collocation applications have been rejected with unilateral "no space" assertions. For offices in which there is space, Covad has been asked to pay an average of $62,450 for each office. For many offices, the cost is even higher, up to $127,500.[17] Bell Atlantic has refused to provide any detailed contractor quotes or post-construction invoices that would permit Covad to determine whether Bell Atlantic's "estimated" non-recurring collocation construction charges bear any relation to actual construction costs. Finally, intervals between Bell Atlantic "North" and "South" vary dramatically. From the actual date of application, Bell Atlantic promises to provide physical collocation in New York (a Bell Atlantic "North" state) within 76 business days. The comparable interval (between data of application to cage turnover) in Virginia and other Bell Atlantic "South" states is 180 business days—roughly *two and one-half times as long*![18]

There is considerable disparity in collocation costs nationwide. The following table provides the average, high, and low costs associated with physical collocation in several selected regions, based on actual collocation applications or collocation tariffs.

[17] Although federal rules require that ILECs like Bell Atlantic permit CLECs to sub-contract "the construction of physical collocation arrangements" (47 CFR 51.323(j)), Bell Atlantic's interpretation is that this requirement only applies to the cage construction (*i.e.*, actually putting up the wire mesh) and does *not* apply to space conditioning and the construction of the segregated collocation room, where the most expensive work such as HVAC and asbestos removal ostensibly take place. In essence, Bell Atlantic expects CLECs to pay for construction projects ostensibly costing equivalent to building a mid-sized home without providing a pre-inspection of the site by the purchaser, blueprints, detailed quotes, complete prior review of work to be done, and a final accounting. No one in their right mind would hire a contractor to build their house in this manner.

[18] *See* Attachment 2, Fogarty Aff. ¶¶ 7-11 ("I do not believe that there is any movement afoot to make these practices uniform for the entire [Bell Atlantic] region.")

ILEC	Region	Average Cost	High	Low
Bell Atlantic	NY-New Jersey	$90,500	$252,300	$27,700
	New York City	$32,100	$38,000	$25,000
	Virginia	$75,500	$119,500	$39,500
	New Hampshire*	$16,700	$16,700	$16,700
Ameritech	Illinois*	$30,600	$30,600	$30,600
	Michigan*	$12,200	$12,200	$12,200
GTE	Washington State	$73,000	$94,300	$43,800
	No. California	$33,700	$36,000	$29,200
SBC	No. California	$28,700	$50,000	$14,400

* State has implemented flat rates for physical collocation.

ILEC collocation practices severely limit the number of people who will receive competitive service. For instance, Covad originally applied for collocation in Bell Atlantic's 1700 14th Street, N.W. central office in the District of Columbia—the central office that serves Howard University, the Whitman-Walker Clinic, and Children's Hospital. To Covad's knowledge, it would have been the *first* collocating CLEC to offer competitive service to those institutions and the citizens that live in the surrounding neighborhoods. However, Bell Atlantic asked Covad to pay $98,750 to construct a segregated collocation room to accommodate Covad's application for only 100 square feet of space. After considering this expense, Covad reluctantly declined to pursue collocation in that office at this time.[19] The net result is not only a lost business opportunity for Covad, but a significant potential loss to those institutions and lost

[19] Covad has also declined to pursue its collocation application for Bell Atlantic's Georgia Avenue central office in DC, where Bell Atlantic has sought to require Covad to build a *2100 square foot room* (at an expense of over $100,000) to accommodate Covad's application for 100 square feet of space.

economic development opportunities for the District of Columbia and its citizens[20]—all because of Bell Atlantic's retrograde, anti-competitive, and usurious physical collocation policies.

When a family moves to a new state or even across town, its communications options should not vary because of different ILEC collocation policies. Achieving the goals of Section 706 requires that the FCC not permit these geographically disparate practices to stand—what is technically feasible in one part of the country is technically feasible in all parts of the country. National collocation rules promulgated under Section 251(c)(6) must make that abundantly clear.[21]

3. ILEC Failure to Comply with Existing Requirements and to Deliver Collocation in a Timely Manner.

Many ILECs shirk existing federal collocation rules, especially the requirement of Section 251(c)(6) that the ILEC "demonstrate" to the state commission support for any "no-space claim," and Section 51.323(f) of the Commission's rules, which requires all ILEC to file "detailed floor plans or diagrams" with the relevant state commission in the event that the ILEC rejects a physical collocation application on account of "no space". In California, Pacific Bell did even attempt to comply with that rule for several months and the CPUC has still not received sufficient demonstrations. In other states, these "no space" filings are completely without substantive content. Regrettably, some state regulatory authorities often do little more than accept the proffered paper without critical

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[20] As Assistant Secretary Larry Irving recently commented, "No issue is more important than ensuring that our communities, particularly our children, obtain access to new technologies and become technologically literate." NTIA, *Assistant Secretary Larry Irving Addresses the Impact of Technology in Urban Communities,* Jul. 6, 1998, http://www.ntia.doc.gov/ntiahome/press/urban2.html.

[21] Covad's specific proposals for reform of ILEC collocation practices are contained in Section II.A, below.

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examination. As described below, Covad proposes many means of strengthening this process.

Covad has also concluded that as a group, ILECs are entirely incapable of providing cage-based physical collocation on a consistently timely basis. Failures are evident coast-to-coast. In the month of February, 1998, Covad was scheduled to receive 18 physical collocation cages from Pacific Bell, but only three cages were delivered complete and on time. In New York, Bell Atlantic "meets" its deadlines by "delivering" incomplete and unserviceable collocation cages—to date, *none* of the cages "received" by Covad have been ready to support service.[22] The attached affidavit of John Fogarty, a 25-year Bell Atlantic – New York veteran who worked for Bell Atlantic as a collocation project manager/technical specialist prior to joining Covad, describes in detail the serious defects of many of the collocation cages that Covad has been presented in New York. Nor are failures of this sort restricted to RBOCs. Four out of four of Covad's cages ordered from GTE in the outskirts of Silicon Valley were delivered without power and remained in that condition for many months.

ILEC physical collocation operations are often understaffed. For example, *all* physical collocation applications for the *entire* 14-state Bell Atlantic region are received primarily by *one* Bell Atlantic employee in New York City. According to Fogarty, this one person reviews applications for completeness and may "reject an application if there is a known lack of space in a particular central office. This space 'analysis' is usually

[22] Attachment 2, Fogarty Aff. ¶¶ 23-25. Fogarty describes in detail some of the problems with several of Covad's cages in New York. *Id.* at ¶ 24 and Attachment A. Fogarty also states: "When I was at BA, it was my job to troubleshoot on collocation problems on space issues, equipment deployment, or anything else that came up. . . . It's my understanding that my position wasn't replaced." *Id.* at ¶ 26.

done based on the manager's memory or through a quick phone call. . . ."[23] In addition, significant logistical issues complicate the initial review and processing as well as the actual engineering and construction of the collocation cage. [24]

4. ILEC Failure to Provide DSL-Capable Loops in a Competitively Neutral Manner

In addition to collocation, local loops as unbundled network elements are an essential input to the provision of DSL services. ILECs game the current process to their advantage in a number of ways: (1) developing separate, often inconsistent state-by-state pricing and availability procedures; (2) adamantly refusing in many states to ever provide loops certified to support DSL services, as required by current federal law; and (3) imposing unreasonable, unilateral and arbitrary "spectral interference" measures to maintain Bellhead control of their network as anti-competitive "DSL traffic cops."

Loops should not be priced differently depending upon whether they are suitable for "digital" or "analog" services. [25] The overwhelming majority of loops, approximately 75% on a national (but not regional) basis, are less than 18,000 feet in length, are simple,

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[23] Attachment 2, Fogarty Aff. ¶¶ 12-15.

[24] *Id.* at ¶ 16 ("The actual collocation work—engineering and construction—involves a multitude of groups within BA that work independently toward a caged collocation end product. There is little to no coordination of all the effort that is required to do collocation. Also, there is absolutely no way to obtain, at any given point in time, the status of a particular collocation request, unless a date is missed.")

[25] Certainly there should be no difference in recurring charges. For those loops that must be conditioned for digital service by removing excess bridged taps, at most, a small non-recurring charge could arguably be justified. However, the better cost analysis would have the ILEC bear the small costs associated with excess bridged tap removal. ILECs install bridged taps to allow themselves options regarding the geographic use of a particular twisted pair. The cost of having additional routing options is laying additional copper and making associated connections. The cost of removing a bridged tap (i.e. removing one of the connections installed to provide a geographic option) should also be viewed as a (relatively minor) cost associated with obtaining the benefit of having initial options regarding the location of the end user of a particular twisted copper pair emanating from a central office. The imputation of costs of removal of excess bridged taps appears consistent with the pricing regimes of some states such as Illinois and Michigan.

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unaugmented ("nonloaded") twisted pairs of AWG 19, 22, 24, and/or 26 copper wire, and can carry analog transmissions as well as digital signals. A limited number of states (such as Illinois and Michigan) price loops in a manner consistent with this reality, but many states, such as Massachusetts and Texas, do not.[26]

The price to Covad for local loops (both recurring and non-recurring) varies considerably based on several following factors: state, population density (urban/suburban/rural), characterization as "analog" or "digital", and (in some states) the type of xDSL service to be provided over the loop. Putting aside issues of state and federal jurisdiction, appropriate pricing methodology, and whether any of the local loop prices are "fair", "appropriate", or "cost-based", policy makers at all levels must realize that the national variance of this essential input is, in and of itself, a deterrent to the speedy and ubiquitous competitive introduction of advanced services. It is as though Burger King could only buy beef and chicken for a particular restaurant within its state of location, pay various prices for different grades of meat (according to disparate state grading schemes), and, then, only purchase pre-formed patties from its competitor McDonald's pursuant to a multi-tiered process overseen by multiple regulators with whom McDonald's (but not Burger King) had a decades long relationship. In such circumstances, to ask simply, "Where's the service (xDSL)?" is to demonstrate unusual insularity with respect to the procurement conditions of an essential input element.

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[26] *See* Brief of Amicus Curiae Covad Communications Company in Support of Petitioners Federal Communications Commission and the United States of America, *AT&T Corp. et. al v. Iowa Utilitied Bd., et. at, and Related Cases*, Nos. 97-826, 97-829, 97-803, 97-831, 97-1075, 97-1087, 97-1099 and 97-1141, (S. Ct. filed Apr. 2, 1998) at 9-10 and Appendix 2 (describing DSL loop rate of $3.72 in Chicago, Illinois and $34.91 in Houston, Texas).

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In addition to differential pricing, actual availability of DSL loops varies considerably nationwide. As Covad documented in the *706 Petitions* dockets, many ILECs do not generally make available loops certified to support DSL signals, despite current federal law requiring that availability. [27] And, as discussed in more detail below, there are significant competitive issues associated with providing DSL services over loops that are provisioned by ILECs through Digital Loop Carrier systems.

The end result is a significant impact on deployment of innovative technology. Assuming that Covad can obtain reasonable and timely collocation in a central office, Covad has the ability to deploy innovative technology over twisted copper pair of less than 18,000 feet in length since it can control the equipment at both ends of the copper pair—provided that rules and regulations do not permit the ILEC to unduly restrict its ability to deploy that innovative DSL technology.[28]

Indeed, ILECs—most notably, SBC—have recently asserted, on the shakiest of technical grounds, "spectrum interference" or "spectrum management" rationales to delay CLEC introduction of DSL service that would compete with the ILEC's own DSL offerings or to restrict CLEC innovation by limiting all CLECs to the DSL implementation of the ILEC.

Therefore, in order to encourage deployment of advanced services to all Americans, the Commission should fully account for the following conclusions that Covad has drawn from its experiences with local loop operations to date:

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[27] SBC and Bell Atlantic show no signs of budging on this issue, given their petitions for reconsideration of the Commission's *706 Order* in this docket.

[28] The provision of DSL service requires equipment be placed at both ends of the twisted copper pair. *See* Attachment 3, *Defining "Digital Loops" – Avoiding Re-monopolization in a Digital World*, a Covad working paper that discusses this and several DSL loop-related topics.

- Loops certified to support innovative DSL technologies must be immediately and readily available regardless of the underlying physical infrastructure and independent of ILEC DSL deployment plans.[29]
- Disparate DSL loop pricing regimes impede competitive introduction of advanced telecommunications services.
- ILECs should be expected to utilize network architecture to stall DSL deployment by CLECs. Unfortunately, in light of on-going ILEC conduct, the provision of competitive services, at least in the medium term, will entail regulatory oversight of certain network architectures.[30] Regulators will need to ensure that remote terminals and equipment support multiple DSL technologies and their implementation will require cross-connect functionality in the central offices to separate CLEC and ILEC digital traffic.
- Unilateral ILEC pronouncements regarding "spectral interference", if allowed to stand, will prevent the competitive deployment of innovative advanced services to all Americans.
- There still exists a tremendous bargaining power disparity between CLECs and ILECs. Without federal-state cooperation or federal preemption, ILECs will continue to exploit their anti-competitive advantage by engaging CLECs

[29] Not only must digital ready loops be available, all competitors must have identical access to information relating to their physical and electronic characteristics as well as verification (testing) systems.

[30] Subloop unbundling is a necessary ingredient of a competitive network typology. CLECs must be able to compel the construction of their own remote DSLAMs and to provision connectivity from remote terminals to their own facilities. While this may initially be less efficient than taking a full loop from an ILEC, it is an option necessary to ameliorate ILEC anticompetitive behavior relating to the technical provisioning of remote DSLAMs and the adequacy of transport facilities from the remote terminal to the central office.

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in serial battles of attrition before state regulatory commissions on issues associated with the provision and pricing of DSL-capable loops.

C. Summary: Competitive DSL for "all Americans"

The above narrative is intended to paint a vivid picture of the many hurdles and pitfalls that CLECs like Covad face *every day* in their effort to provide competitive DSL services to as many Americans as possible. The purpose is not to embarrass any particular incumbent LEC but to demonstrate to the Commission that immediate action is needed to rectify this situation and to show that ILEC conduct is the *principal* reason why data-CLECs do not yet proliferate the competitive landscape with pervasive coverage. Given the chance, CLECs will provide the type of competitive entry envisioned by the 1996 Act. Many of the offices where Covad would like to collocate include those in residential communities like Lake Zurich, IL (pop. 16,786; "no space" for physical collocation, according to Ameritech) and Waldorf, MD (pop. 44,069; "no space" for physical collocation, according to Bell Atlantic). If CLECs are given the chance to compete, it is incorrect to assume that rural areas will not see the benefits of entry—from 1994-97, computer penetration in rural America grew faster than in urban areas.[31] Demand for high-bandwidth services is sure to follow.

[31] NTIA, *Falling through the Net II: New Data on the Digital Divide* (1998) at 3 ("After accounting for income, there is not a significant difference between rural, urban, and central city areas for computer penetration"), Chart 10.

II. COMMENTS ON THE COMMISSION'S NOTICE

In this section, Covad discusses with specificity the Commission's proposals in the *Advanced Services NPRM* and proposes detailed rules that would address the problems outlined above. In general, Covad strongly supports the balance struck by the Commission in the *NPRM* and urges the Commission to implement national collocation and DSL loop unbundling rules as soon as practicable. In order to assist the Commission in this process, Attachment 4 contains Covad's proposals for actual cageless collocation and DSL-loop unbundling rules, which Covad hopes will focus debate in this docket upon specific regulatory provisions.

A. National Minimum Standards for Collocation

Attachment 4 contains Covad's proposed modifications to the Commission's collocation rules (47 CFR §§ 51.5, 51.321 and 51.323). These proposals would, in Covad's opinion, address the principal problems faced by Covad and addressed by the Commission in the *NPRM*. However, Covad is certain that other representatives from the competitive community will have additional suggestions for Commission action. As a result, Covad does not present Attachment 4 as the "true solution" to these issues.

1. Proposed Modifications to the Commission's Collocation Rules

Covad's proposed rules would alter the Commission's existing rules in the following ways—

Alternative Forms of Collocation

- Codify the principle articulated by the Commission in the *First Local Competition Order* and the *NPRM* in this docket that multiple forms of physical collocation are available and that ILECs are required by the Act to

provide any "technically feasible" form of physical collocation, including cageless physical collocation. Attachment 4, Section 51.323(a).

- Promulgate detailed cageless physical collocation rules, defined as the ability of a requesting carrier to physically collocate a minimum of one bay of equipment (which takes up approximately two square feet of actual floor space) in already-conditioned or prepared space in an ILEC's premises. Attachment 4, Sections 51.323(a)(2), (f)(6). Delays and costs caused by cage construction, partitioning, floor conditioning or collocation room construction would be eliminated because ILECs would not be able to require CLECs to face delays and costs it would not incur if perfectly-good space is already available in the central office.
- Establish national principles for security arrangements for all forms of physical collocation, including cageless. Attachment 4, Section 51.323(i). In particular, ILECs would be permitted to place reasonable and nondiscriminatory security restrictions upon all forms of physical collocation at their own expense, provided that those restrictions are not more onerous than restrictions it places on its own employees or contractors. In addition, such restrictions shall not impair the ability of a collocating carrier to repair its equipment at any time to restore a service outage or impairment.

Resolution of Case-Specific "No Space" and Technical Disputes.

- Place a "clear and convincing" evidence burden of proof upon an ILEC when it contends that a particular application for any form of physical collocation is not technically feasible (Section 51.321(d)) or that no space exists within or

on a particular ILEC premises for physical collocation (Section 51.321(e)). Because an ILEC controls virtually all information with regard to the space conditions in its central offices, well-accepted legal principles support placing the burden of proof upon them in these disputes.

- When an ILEC rejects an application for any form of physical collocation for space reasons, it must permit the requesting carrier to inspect the premises within five days and make detailed floor plans or diagrams available to the requesting carrier. Attachment 4, Sections 51.321(f), (h).
- Time deadlines are established for any state commission proceeding related to specific technical or space disputes. Attachment 4, Sections 51.321(d), (e).

Repeal Unnecessary Restrictions on Collocated Equipment.

- Permit requesting telecommunications carriers to utilize the full features, functions and capabilities (including packet-switching and routing functions) of any rack-mountable equipment that is used for interconnection or access to unbundled network elements. Attachment 4, Section 51.323(b).
- Explicitly provide in Section 51.323(b) that DSLAMs, remote access management equipment, digital packet switching equipment, cross-connect equipment, and routers may be collocated.
- Adopt the Commission's proposal in the *NPRM* that ILECs may only impose nondiscriminatory safety requirements upon collocated equipment. Attachment 4, Section 51.323(b).
- Provide for a quick method of resolving collocation equipment disputes. Attachment 4, Section 51.323(b).

2. Comments on the Commission's Collocation Proposals

a. Adoption of National Standards (¶¶ 122-25).

Covad strongly supports the Commission's proposal in paragraph 124 of the *NPRM* that it adopt national minimum standards with regard to physical collocation rules. Adoption of national, minimum standards along the lines that Covad proposes in Attachment 4 would greatly encourage the deployment of advanced services by competitive carriers like Covad in residential and rural areas and also would vastly increase the amount of investment in the construction of new, advanced data communications networks nationwide.

In particular, the rules proposed by Covad—especially adoption of cageless physical collocation and removing artificial restrictions on uses of collocated equipment—would dramatically lower the cost of constructing networks like Covad's. Indeed, the current cost of physical collocation is the *single largest one-time, sole-source cost* Covad has. Indeed, it is not uncommon for a simple, 10'x10' collocation cage to cost *more* than the sophisticated and advanced equipment that Covad places in that cage. In addition, removal of restrictions upon use of collocated equipment would allow Covad to build more efficient and fault-tolerant networks capable of innovative evolution at much lower costs because distributing packet-switching functionality to the periphery of the network reduces the need to build and interconnect centralized (and expensive) routing facilities in each metropolitan area.

With the exception of resolving case-specific technical and space limitation disputes (which Section 251(c)(6) explicitly provides to the states), the Commission retains plenary rulemaking authority with regard to interpretation and application of the

provisions of Section 251(c)(6). Section 251(d)(1) explicitly grants the Commission the authority to promulgate rules implementing *all* of Section 251 of the Act including Section 251(c)(6). 47 U.S.C. § 251(d)(1). Therefore, with the exception of case-specific technical determinations and space availability disputes explicitly referred to in Section 251(c)(6), the Commission retains the authority to establish federal rules defining the term "physical collocation" and outline the obligations of ILECs pursuant regarding physical collocation.

The Commission has other sources of enforcement power regarding physical collocation than are currently in evidence, because of the historical relationship between the *Expanded Interconnection* proceeding and the ultimate passage of Section 251(c)(6).[32] Since some form of federally-required collocation practices existed prior to passage of Section 251(c)(6), many interconnection agreements explicitly refer to the ILEC's FCC Tariff No. 1 *in lieu* of placing detailed physical or virtual collocation terms and conditions in those agreements. As a result, the Commission has tremendous power over the actual physical collocation offerings that ILECs provide to CLECs solely by virtue of these incorporations-by-reference. In addition, the *Expanded Interconnection* physical collocation rules provide a powerful means of demonstrating "technical feasibility" of a particular form of physical collocation. Moreover, those rules can be of guidance in determining appropriate delivery deadlines and appropriate costing methodologies for all forms of collocation. Therefore, Covad urges that in addition to adopting national standards under Section 251(c)(6) in this proceeding, the Commission also should expeditiously revisit the *Expanded Interconnection* physical collocation rules

[32] *See NPRM* at ¶¶ 118-121 (relationship between *Expanded Interconnection* and Section 251(c)(6)).

and make appropriate changes, such as requiring cageless physical collocation and examining ILEC collocation pricing practices.

b. Collocation Equipment (¶¶126-35).

Covad strongly supports the Commission's proposals to eliminate unnecessary restrictions on collocated equipment. Attachment 4, Section 51.323(b) provides a specific rule on this issue that Covad believes would greatly advance the deployment of advanced telecommunications services to all Americans.

This issue plays a very significant role in timely competitive provision of advanced services. Collocation of packet-switching and network management equipment in end-offices would make CLEC DSL networks much more efficient, reliable and cost-effective. By distributing switching capability and functions to the periphery of the local network, the network will, like the Internet backbone, be able to "route around" congested transport links or trouble spots. As a result, transport bandwidth would be maximized and the outage of one of several packet-switches would not cause a general network failure. Prohibiting collocation of packet-switches and network management equipment in central offices essentially forces the CLEC's DSL network into a "star" configuration, in which all DSL traffic is routed from each office to one regional data center. Construction of this center (and procuring the high-bandwidth interoffice transport to the center) very expensive and inefficient.

Over the past few years, in the world of data communications, the terms "switching", "routing", and "multiplexing" functions have become distinctions without a difference. However, the Commission's current rules allow ILECs to engage in endless, case-by-case litigation of the "capabilities" or "use" of a particular piece of equipment in

every state and over every virtually every product model number. The current rule is an historical accident, a relic of the *Expanded Interconnection* docket where the Commission was explicitly not promoting the deployment of competitive, switched local services (which was actually illegal in some states at that time). The purpose behind Section 706 is precisely the opposite—indeed, Section 706(c)(1) *explicitly defines* "advanced telecommunications capability" as including "switched" functionality. 47 U.S.C. § 157nt.

Therefore, Covad supports the Commission's proposal to remove these restrictions upon collocated equipment. *NPRM* at ¶ 129. Covad would like to remind the Commission, however, that whatever rule changes it drafts *must* be crafted so as to prevent ILECs from engaging in wasteful and costly case-by-case litigation of these issues.[33] For instance, the Commission asks in ¶ 130 whether it should repeal the switching restrictions only for equipment that integrates both switching and other functions. Such a decision would only encourage ILECs to engage in another round of product-by-product litigation that further would slow down CLEC deployment of advanced services, because it would let ILECs conjure up claims that a particular piece of equipment does not "integrate" certain functions.

Covad does not believe that it makes sense to differentiate among technologies any more—the artificial difference between "switching" and "multiplexing" or "cross-

[33] Currently, many ILECs will review a CLEC's collocated equipment *prior to turning up power* to that equipment. As a result, if the Commission drafts rules that give the ILEC an "out", the ILEC may simply refuse to turn up power to a collocation node until it is "satisfied" that the equipment comports with its own implementation of the law. The CLEC would then be forced into the position of having to fight any ILEC before it can even offer service to customers. That situation is clearly inconsistent with the object of Section 706.

connect" functions that got us into this mess in the first place. Creating new distinctions will not solve the problem.

Instead, the restriction on switching equipment should be removed in its entirety, as proposed by Covad in Attachment 4, Section 51.323(b). Covad supports the Commission's suggestions apparently designed to conserve central office space. As a result, Covad's proposed rule is centered on "rack-mountable" equipment that the CLEC determines is used or useful for interconnection and access to unbundled network elements.[34]

With the "rack-mountable" provision, Covad does not believe that the Commission's proposal in ¶ 132 is necessary (that no "switching equipment" be permitted to be collocated if there is only room for one carrier to collocate such equipment). Rack-mountable equipment simply does not take up excessive space. "Rack-mountable" is an objective standard that can easily be determined simply by looking at the equipment—there would be no need to go "inside the black box" and utilize a legal process to determine whether a "switch" is hidden in there or not.

Finally, while it is certainly reasonable that collocated equipment meet relevant safety standards, ILECs have used this "Apple Pie" issue to hinder CLEC deployment of DSL services.[35] As a result, Covad supports the Commission's proposals that any safety standards (such as NEBS) be nondiscriminatory—that is, congruent with the standards ILECs maintain for similar equipment in the provision of their own services. *NPRM* at

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[34] Collocation of equipment that would not fit on a standard rack or in a telecommunications equipment bay is not common and generally is done on a case-by-case basis, as such equipment often tends to require special power and cabling arrangements from the ILEC. In the context of a CLEC wishing to collocate a large, 5ESS switch, it is appropriate to consider the impact upon collocation space exhaustion.

[35] *See, e.g.*, DATA Comments in CC Docket Nos. 98-11, 98-26, 98-32 at 21, Attach. 1.

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¶¶ 134-35. If ILECs do not utilize NEBS safety standards for their own equipment, they should not be permitted to impose those standards upon CLECs. Covad also believes that ILECs should not be able to impose any reliability standards (including NEBS performance standards) upon collocated equipment. The reliability of a CLEC's equipment is the responsibility of the CLEC alone.

Given evidence of ILEC abuse of NEBS implementation, Covad's proposed rule contains additional protections needed to prevent future abuses. Like other collocation equipment issues, the Commission should re-assert its authority over these disputes, in order to facilitate swift establishment of nationwide precedents over particular safety standards. In addition, when an ILEC claims that a particular piece of equipment does not meet a relevant safety standard, the ILEC should make available to the CLEC a list of equipment that *does* meet this standard and also a list of equipment that the ILEC has placed in its central offices—only then will CLECs be able to know whether they are receiving discriminatory treatment. Finally, as described above, safety standards cannot be utilized by ILECs to maintain an "effective veto" over CLEC deployment—instead, ILECs must first obtain a determination from the Commission that a CLEC may not collocate and use a particular piece of equipment before the ILEC can refuse power to the CLEC's collocation node.

In conclusion, the Commission must reassert its role in the timely resolution of disputes arising under its own rules. As discussed above, the Commission has plenary rulemaking authority with regard to the physical collocation requirements of Section 251(c)(6). State-by-state litigation of this issue has been a disaster, as different states have come to entirely different decisions on even relatively stable technology.

c. Allocation of Space (¶¶ 136-44)

Covad strongly supports the Commission's tentative conclusion in ¶ 137 of the *NPRM* that ILECs be required to make available "alternative physical collocation arrangements" including "physical collocation that does not require the use of collocation cages ('cageless' collocation)." Covad also supports the other Commission proposals, such as the use of shared collocation cages and the option to request collocation space of any size without regard to a standard, minimum requirement.

As Covad showed in its Comments in the Section 706 Petitions, cageless physical collocation gets away from the retrograde, "one-size-fits-all" cage-based approach that ILECs have established. Different CLECs have different collocation needs, and the collocation needs of even one CLEC may vary from office to office. For instance, to serve smaller communities like Saint Margarets, MD, Covad may only need to collocate one or two bays of equipment, which would take up, at most, 15-30 square feet of floor space. To require the CLEC to in all cases construct a large, segregated collocation room (with a separate entryway, doors, heating and air conditioning, and sometimes earthquake-proof support structures) to support an ILEC-required minimum 100 square foot space is not only *silly*, it is costly and time-consuming, wastes precious central office space, and ultimately presents a substantial barrier to entry into smaller towns and residential areas.

Recently, NYPSC Administrative Law Judge Eleanor Stein, in the context of Bell Atlantic's interLATA entry efforts, agreed with this general assessment, indicting Bell

Atlantic's cage-based collocation practices as "tediously slow" and "insufficient to handle possible ubiquitous mass market entry on a commercially reasonable schedule."[36]

Covad would like to reiterate, however, that requiring the availability of "smaller cages" and "common collocation areas" (as Bell Atlantic and SBC are apt to propose in this proceeding) *is not enough* to achieve the Commission's goals in this proceeding. These proposals *still* require CLECs to finance the construction of large, partitioned and separate collocation "rooms" as large as 2100 square feet before CLECs can physically collocate equipment in an office. It is the space that these rooms take which keeps CLECs out of 20-33% of neighborhoods in many instances, and it is the cost of building these rooms that makes it uneconomical for CLECs to serve less-affluent areas. Permitting CLECs to obtain smaller cages or place an uncaged rack of equipment in a segregated collocation room after the CLEC has financed and awaited the construction of a grand, several-thousand square foot room is not a cost or time saving. More needs to be done.

Covad has several proposals to address these issues, which are described in detail in Attachment 4, Sections 51.321 and 51.323 and Attachment 1, Regan Aff ¶¶ 16-31. The cageless collocation arrangement proposed in Attachment 4 is very similar to the arrangement that Covad and U S WEST Communications, Inc. negotiated in the State of Washington.

First, the Commission should mandate cageless physical collocation as proposed by Covad. ILECs would be required to permit CLECs to physically collocate equipment

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[36] *Proceeding on Motion of the Commission to Examine Methods by which Competitive Local Exchange Carriers can Obtain and Combine Unbundled Network Elements*, Proposed Findings of Administrative Law Judge Eleanor Stein, NYPSC Case 98-C-0690 (Aug. 4, 1998) at 22-23.

on a single bay increment basis in an already-conditioned area of the ILEC central office. Sufficient conditioned space generally already exists in ILEC central offices, especially since advances in computing technology have shrunk the size of telecommunications equipment. It is silly to require CLECs to condition *new* space in an ILEC central office if sufficient conditioned space already exists. The separation of CLEC bays from ILEC bays on a bay-to-bay basis is sufficient separation of CLEC and ILEC equipment. Since the time of the AT&T divestiture, AT&T and RBOC equipment in central offices have often been separated only by painted lines on the floor to distinguish AT&T equipment bays from RBOC equipment bays.

Second, the cageless arrangement described above would be available within 45 days of the CLEC's application. The CLEC would only be charged for actual incremental work done to prepare the space for service—for instance, installation of a power outlet and telephone jack, cabling between the bay and the main distribution frame, etc. With a typical DSL network configuration, these initial costs should not be more than as few thousand dollars for each office.

Third, if a dispute arises with regard to the availability of sufficient already-conditioned floor space in a particular office, there would be a "fast-track" dispute resolution process before the relevant state commission. CLECs would have inspection rights to the particular office and also would have access to floor plans and diagrams, subject to an appropriate protective order.

Fourth, in the event that floor space conditioning or additional infrastructure construction is necessary (either because a CLEC has asked for a cage despite the availability of cageless or because no sufficient already-conditioned space is available),

the ILEC may only charge the CLEC the pro rata share of those conditioning charges. That is, if a CLEC requests a 100 square foot cage but the ILEC seeks to build a 1000 square foot room, the CLEC would only be charged 1/10th of the collocation room infrastructure, construction, and conditioning charges.[37] Where this work is required, collocation arrangements should be available in 76 business days.

Fifth, the ILEC can only impose reasonable and nondiscriminatory security arrangements on all forms of physical collocation, including cageless physical collocation.

Covad agrees entirely with the Commission's conclusion in ¶ 141 of the *NPRM* that the security arrangements associated with cageless physical collocation can be worked out between the parties, if one can assume good faith negotiations. When carriers are motivated solely by regular commercial (and not anti-competitive) motives, cageless arrangements are actually quite common between competitive telecommunications carriers in the industry.[38] It is only in the cavernous, hallowed halls of ILEC central offices that medieval cages are the norm.

Covad's proposed security arrangements (Attachment 4, Section 51.323(i)) are therefore flexible but premised on the fundamental principles of mutuality, nondiscrimination, and non-interference. Security measures must be taken at the expense of the party desiring those measures, no ILEC security measure can be more stringent

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[37] As discussed above, the Commission has the plenary authority to prescribe national minimum rules and regulations for physical collocation under Section 251(c)(6).

[38] For instance, Intermedia, a CLEC, provides cageless arrangements in its offices in Albany, Birmingham, East Hartford, Glenmont, Poughkeepsie and Syracuse. *See* Minutes of Technical Conference, *Proceeding on Motion of the Commission to Examine Methods by which Competitive Local Exchange Carriers can Obtain and Combine Unbundled Network Elements*, NYPSC Case 98-C-0690, at 484-85 (June 30, 1998).

than what the ILEC utilizes for its own employees or employees of authorized contractors, and no ILEC security measure can impair the ability of a CLEC to maintain the highest level of service to its customers. What is most important to remember about security arrangements is that *no* "one-size-fits-all" approach—including caging competitors—is appropriate for every central office.[39]

The Commission should read the ILEC security arguments that will not doubt permeate this proceeding with great care. These arguments are straight from the old Bellhead playbook—indeed, one ILEC has argued that it would be "irresponsible and irrational" to permit "multiple carriers" to have cageless collocation arrangements because a "multi-carrier environment" would be "a ticking time bomb" that would increase the "risks of network disruption" due to the "potential for confusion" and the potential for a "static discharge" that could affect ILEC equipment.[40] These "harm to the network" arguments are reminiscent of the "foreign attachment" debates and other pre-divestiture footnotes to history.

The Commission cannot forget that Bellhead security arguments against cageless are perfectly aligned with the ILEC's incentive to make physical collocation more expensive and difficult. Covad believes that the confluence of ILEC incentives to delay entry and raise their rivals' costs has led to their collocation cage construction policies. Therefore, any permissible security arrangements for any form of physical collocation,

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[39] For instance, security arrangements in unmanned offices should be different than arrangements in busy metropolitan offices where multiple security guards (who may be available for escort) are stationed at all times. *See* Attachment 1, Regan Aff. ¶ 22 (describing Covad-U S WEST cageless security arrangements).

[40] The quoted passages are taken from *actual* testimony of a Bell Atlantic witness discussing Covad's proposal. *See* Testimony of Donald E. Albert, Bell Atlantic-Virginia Inc., filed Aug. 12, 1998 in VA SCC Case No. PUC980088 ("Albert VA Testimony").

including cageless, *must* be borne by the carrier that desires more security. Only then will the ILEC put in place the appropriate level of security based only upon its actual security concerns and *not* based upon its incentive to make CLEC entry more difficult or expensive.

Another key security principle is nondiscriminatory implementation. Covad is aware that Bell Atlantic has authorized literally *dozens* of independent contractors to enter and perform their work in Bell Atlantic central offices. In New York, Bell Atlantic manages a portfolio of 57 independent contractors or vendors that have various degrees of access to central offices, and in Virginia, Bell Atlantic manages 52 different vendors and contractors.[41] However, when Covad has requested cageless physical collocation in those states, Bell Atlantic's primary objection to the arrangement is that if "multiple carriers" had cageless access to their central offices, the task of "managing" several CLECs in an office would be too difficult and potentially lead to network outages.[42] Thus, while ILECs currently seem able to manage access to central offices for dozens of contractors seemingly without incident, they cannot stand to add a few CLECs to the mix. The implication is clear—when it suits their purposes, ILECs are more than content to give contractors the "run" of the central office, but when it comes to competing carriers, ILECs prefer to deny access entirely.

Finally, the Commission should not permit security arrangements to be used to force CLECs to provide inferior service to their customers. No ILEC security restriction should be permitted that would prevent CLECs from repairing an out-of-service or

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[41] Attachment 1, Regan Aff. ¶ 25.Pacific Bell also uses scores of independent contractors in its central offices, but does not permit Covad personnel to deal with Covad equipment outside of their cages.

[42] *See, e.g.*, Albert VA Testimony at 5-6.

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degraded line on a 24 hour a day, 7 day a week basis. A principal Covad objection to virtual collocation arrangements (outlined in Attachment 1, Regan Aff ¶¶ 32-36) is that virtual arrangements do not offer the CLEC this type of hands-on, quality of service control over the its own network. ILECs cannot be permitted to impose security arrangements that put CLEC customer service at risk.

d. Space Exhaustion (¶¶ 145-49)

In ¶¶ 146-49, the Commission recounts many laudable proposals to deal with collocation space exhaustion. The *single most effective step* it can take in remedying perceived central office space shortages would be to mandate cageless physical collocation as proposed by Covad. By removing the need to construct and build space-hogging, caged collocation rooms, space exhaustion problems will be largely alleviated.

The evidence for this proposition comes from the ILECs themselves. Invariably, after denying a request for a 10'x10' cage on account of "no space", the ILEC generally counters that "virtual collocation" of that very same equipment is available in the office. Those statements are, in effect, admissions that there is indeed space in those offices for the equipment to be collocated—there just does not seem to be room for the cage or the segregated collocation room that the ILEC requires the CLEC to build.

Covad's cageless physical collocation proposal would make conditioned floor space available in single-bay increments wherever in the central office that conditioned space could be found. This would permit CLECs to collocate in corners, at the ends of unfilled ILEC line-ups, and in other already-conditioned areas of the central office. As Covad's Director of Collocation, Thomas J. Regan, who has over twenty-seven years

experience with Pacific Bell including extensive experience establishing physical collocation arrangements, says:

> Finding space for a cageless bay of equipment in a central office is like finding space in a packed suitcase for a pair of socks. Finding space for a segregated collocation room in that same central office is like finding space in a packed suitcase for a starched tuxedo.

Attachment 1, Regan Aff. ¶ 31.

Nevertheless, management of ILEC central office space is a major issue and Covad supports the proposals made by the Commission in ¶¶ 146-47 of the *NPRM*. In particular, Covad believes that ILEC filings regarding space exhaustion, and resulting state processes subsequent to these filings, need to be more immediate and expedited. As discussed above, in many instances, ILECs take several months to make the demonstration required by Section 251(c)(6) and Commission rules, and in many instances, the states do not act upon these filings. These filings should happen within thirty days of rejection of an application, and should be served, complete with the detailed floor plans and diagrams, upon the CLEC whose application was rejected in that office and upon all entities who may have already established or recently sought to establish a physical collocation node in that office. Serving all potentially interested parties with this filing will facilitate a swift and proper decision by the state commission.[43] In addition, as proposed by the Commission in ¶ 146, the CLEC whose

[43] It is important to serve CLECs already collocated in that office with a subsequent "no space" claim because those CLECs are most likely to know the actual space conditions in those offices. In addition, those CLECs may have been required to construct large collocation "rooms" in the past, subject to the possibility that they might have some of that initial cost "rebated" when subsequent CLECs collocate in that space; as a result, those CLECs have an incentive to ensure that the collocation space actually be "full" before the ILEC makes a "no space" claim.

physical collocation application was rejected should have the right to inspect the particular office.

Covad also supports the Commission's proposal in ¶ 147 that ILECs should maintain and make available lists of the space availability status in their central offices. Even in a state like New York, with 522 Bell Atlantic offices, Bell Atlantic has only surveyed 100 central offices to determine collocation space status and has not determined the space status of the other 422.[44] Not knowing the space status of a particular office can delay the CLEC one month while such a survey is done. Most importantly, the unsurveyed offices in New York are in smaller, residential and rural communities—further evidence that it is citizens of these areas that are most directly injured by current policies.

ILECs should be required to survey their offices for physical collocation space and should be required to make those lists available on the World Wide Web, complete with the number of current collocators, the amount of floor space being retained by the ILEC for future specific uses (47 CFR 51.323(f)), and measures that the ILEC is taking to make additional space available for physical collocation. Indeed, it is critical that ILECs be required to report regularly the amount of space they are retaining for their own use.[45] Since central office space conditions are constantly changing, these reports should be updated at least every six months and within thirty days of whenever the ILEC

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[44] *See* Minutes of Technical Conference, *Proceeding on Motion of the Commission to Examine Methods by which Competitive Local Exchange Carriers can Obtain and Combine Unbundled Network Elements*, NYPSC Case 98-C-0690, at 105 (June 30, 1998).

[45] Attachment 2, Fogarty Aff. ¶ 27 ("Various groups within [Bell Atlantic] fight to retain and obtain space for their future use. . . . CLECs don't have a voice in this fight for space.").

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establishes a new collocation arrangement or whenever the ILEC installs, replaces, retires or removes equipment from the office.

Covad does not dispute that it is conceivable that in some offices all existing floor space could eventually become exhausted. In this situation, Covad has two proposals. First, Covad has proposed to some ILECs "CEV" collocation—an arrangement in which a controlled environmental vault ("CEV"), owned by the CLEC, would be placed either in the parking lot of the central office or on the roof of the office, but which would obtain its power, loops and transport from the central office.[46] As Regan describes, Pacific Bell utilizes CEVs adjacent to central offices for its own purposes. Covad believes that this approach for physical collocation is technically feasible and should be considered at least with regard to true "no space" offices. Simply because such an arrangement would be "unique" (for a CLEC), a temporary "headache" to the ILEC, or present a potential parking lot "eyesore" should not be an excuse to deny Americans access to competitive, advanced telecommunications services.

The other option in true "no space" offices is, of course, virtual collocation. In ¶ 148, the Commission asks questions on the manner in which virtual collocation could be made more attractive to advanced services providers. Attachment 1 (Regan Aff ¶¶ 32-36) lists the problems that Covad sees with *any* virtual collocation arrangement, provided that virtual collocation means that the CLEC must transfer its equipment to the ILEC and that only ILEC employees be permitted to maintain and repair such equipment. A key problem with virtual collocation is that as long as the ILEC employees remain the "sole source" for maintaining and repairing virtually collocated equipment, CLECs have no

[46] Attachment 1, Regan Aff. ¶ 37.

control over their costs or service quality. CLECs are required to train ILEC employees on how to operate the equipment at considerable expense (which, in the event of advanced services equipment is oftentimes very different than traditional circuit-switching equipment). Once trained, the CLEC does not have control over technician performance; it cannot "fire" the ILEC if the ILEC's technician takes too long to fix a broken line card or complete a routine maintenance job. Only by permitting CLECs to retain ownership of virtually collocated equipment and permitting CLEC employees or CLEC-designated contractors to install, maintain and repair equipment collocated on a virtual basis would this type of arrangement become somewhat more palatable to CLECs.

e. Effects of Additional Collocation Requirements (¶ 150)

In ¶ 150, the Commission asked parties to comment on how adopting new collocation requirements might impact existing interconnection arrangements, existing state requirements, or existing state proceedings.

With regard to existing interconnection agreements, most agreements that Covad is familiar with state that the ILEC will provide "physical collocation as required by Section 251(c)(6)" or similar language that would automatically incorporate any change in applicable law or regulations. In addition, many agreements have specific "Change in Law" clauses that may provide a means of addressing changes in FCC or state rules or regulations.[47] That said, Covad is concerned that if the Commission implements new or modified collocation rules, ILECs will still seek to delay the availability of these new options, especially cageless physical collocation. Indeed, Covad anticipates that ILECs

[47] However, many such provisions require that the regulation be "final" or "nonappealable". This raises the possibility that implementation of rule changes could be delayed during the pendancy of any appeal.

would simply tell CLECs to await an eventual "cageless collocation" tariff that would be filed at some unspecified date in the future, while those ILECs simultaneously file appeals of the Order in this proceeding.

Therefore, the Commission should, if and when it issues modified collocation rules in this proceeding, order all ILECs to come into full compliance on the effective date of those rules. The Commission should specifically state that ILECs may not delay the offering of any alternative collocation arrangements required by the Order while the ILEC prepares a generic "tariff" for that service. The Commission should make it clear that CLECs may, upon the effective date of the rules, be able to apply for and obtain all forms of physical collocation (including cageless physical collocation) if their interconnection agreeements permit them to do so, such as agreements that contain clauses that require the ILEC to provide collocation in any form as required by applicable law. The Commission should make the same decision regarding similar clauses that may deal with restrictions on collocation equipment. In addition, the Commission should also order ILECs to immediately, upon release of the Order and at the request of a CLEC, renegotiate those agreements to incorporate any and all changes in applicable law that result from that Order. The Commission should also clearly state that the failure of an ILEC to agree to amend those existing agreements to incorporate the changes resulting from the Order within thirty days shall be deemed *prima facie* evidence of bad faith negotiation practices by the ILEC and a violation of a Commission order.

With regard to impact upon state proceedings or tariffs, since the Commission has proposed to establish national minimum standards, presumably state standards or decisions regarding collocation methods or equipment pursuant to Section 251(c)(6) that

are inconsistent with or that do not meet these minimum standards would be immediately preempted pursuant to the Supremacy Clause and Section 251(d)(3). The Commission, however, should be mindful that inconsistent state collocation tariffs would remain in place for purely intrastate purposes to the extent that those tariffs do not substantially prevent implementation of the requirements of Section 251 and the purposes of the 1996 Act.[48]

B. National Minimum Standards for Local Loop UNEs

If the FCC is truly serious about encouraging the deployment of advanced services to all Americans, then CLECs should be afforded the opportunity to use local loops so as to get that job done. It is not enough for CLECs to be grudgingly granted simple parity in the use of loops with ILECs. Such an implementing philosophy would restrict service to areas and at levels the ILECs were willing to provide. As a result, innovation and competition would be stillborn.

One example should suffice. The federal ADSL tariffs recently filed by a number of ILECs commit them only to provide DSL services where it is easy to do so, over loops in which it is easy to provide these services, and in a manner that will not threaten to cannibalize current T1 and ISDN services. There is no commitment by these ILECs to provide DSL to customers served by Digital Loop Carrier ("DLC") systems. Indeed, Covad was amused to learn that Pacific Bell is proposing to charge customers $900 to condition a line for ADSL service.[49] It is clear that these ILECs are not serious about

[48] 47 U.S.C. §§ 251(d)(3), 252(e)(3), 261(b), 261(c).

[49] Pacific Bell Telephone Company, Tariff FCC No. 128, Transmittal No. 1986 (June 15, 1998) at Section 17.7.4(B).

deployment to all Americans, and there appears to be little ILEC interest in pushing the technological envelope to drive service out, bandwidth up, and costs down.

Simple parity in the use of loops is not enough to achieve the goal of Section 706. Covad must be afforded *parity of opportunity* in the use of existing and future loop infrastructure to make a difference. The simple fact that a Bellhead mentality prevents ILECs from capitalizing upon the opportunities that the embedded local plant posses should not similarly constrain companies like Covad from taking advantage of those opportunities. The detailed rules proposed in Attachment 4 of these Comments would provide this parity of opportunity.

1. Proposed Modifications to Loop Unbundling Rules

Attachment 4 contains Covad's proposals to revise the Commission's existing unbundling rules in a manner that would, in Covad's opinion, allow start-up competitors to deploy advanced telecommunications services rapidly. Covad is sure that other commenters are likely to have other suggestion for rule changes, and Covad certainly does not believe that Attachment 4 incorporates all possible solutions. The rules in Attachment 4 hopefully will focus debate in this docket upon the *actual rules* and not vague generalities—because experience has shown that ILECs will take advantage of any potential legal ambiguity or opportunity.

Covad's proposed rules would alter the Commission's existing rules in the following manner—

Provisioning of DSL Capable Loops

- Define the local loop network element as the provision by an incumbent LEC of the total features, functions and capabilities of the transmission facility

between a distribution frame in an incumbent LEC central office and an end user customer premises; establish that provision of that element may involve conditioning that facility to support either analog, ISDN, or xDSL services. Attachment 4, Section 51.319(a).

- Establish provisioning requirements based on the type of facilities involved, distinguishing between the currently more common all-copper facility and the increasingly deployed mixed copper-fiber facility incorporating a digital loop carrier facility. Attachment 4, Section 51.319(a)(1)-(2).
- Create a reporting requirement that would allow the Chief of the Common Carrier Bureau to determine the availability and functionality of DSLAMs capable of being located in remote terminals and of supporting multiple technical implementations of DSL services. Attachment 4, Section 51.319(a)(3).
- Require ILECs to submit plans detailing how they will deploy DSLAMs capable of being located in remote terminals and of supporting multiple technical implementations of DSL services upon the determination of the Chief of the Common Carrier Bureau that such equipment is reasonably available for deployment. Attachment 4, Section 51.319(a)(3).

Spectrum Management

- Establish "Harmful Interference", to be determined by the industry under the auspices of the Chief of the Common Carrier Bureau, as the applicable standard for DSL services.

- Explicitly state that spectral interference cannot be used by an incumbent LEC as a reason for refusing to provide, or to cease the provision of, any local loop network element. Attachment 4, 51.319(a)(4).

Subloop Unbundling

- Require subloop unbundling to provide interconnection and collocation at remote terminals. Attachment 4, 51.319(a)(5).
- Require ILECs to make space available within its remote terminals on a first-come, first-served basis until space is exhausted, whereupon an ILEC is required to construct, upon request and on a reimbursable basis, facilities within its rights of way to effectuate subloop interconnection and collocation. Attachment 4, Section 51.319(a)(5).

2. Comments on Commission's Loop Proposals

a. Adoption of National Standards (¶¶ 154-56)

Covad strongly believes that the Commission should establish national minimum standards for DSL-capable loops. Courts have recognized that the Commission has the power to define unbundled network elements pursuant to Section 251. Covad's experience is demonstrable evidence that national standards for DSL-capable loops are needed in order to foster the rapid development of competition and deployment of advanced services throughout the country.

Covad is concerned that incumbent LECs will utilize state processes with regard to DSL-loop unbundling to continue to game the system. As described above and in Covad's comments in the *706 Petitions* docket, the ILEC record with regard to making these loops generally available is deplorable. In many instances, pricing of "DSL" or

"Digital" loops has been delayed by state commissions well beyond the nine-month arbitration deadline imposed by Section 252. Pricing and availability of digital-ready loops seems to have been routinely "put off" by ILECs and state commissions.

That said, Covad agrees with the Commission's suggestion in ¶ 155 that it should consider *best practices* among states in determining the extent to which those practices can be adopted nationally. In this regard, Covad applauds those states, such as Georgia, Florida, Illinois and Michigan, that clearly require ILECs to provide ADSL, HDSL and other xDSL conditioned loops and have priced those elements in a generally appropriate manner.

In establishing national rules, the Commission should be mindful that it define the local loop element in order to provide CLECs with sufficient flexibility to provide xDSL services to as many American consumers as possible. Section 3(29) of the Act explicitly states that a "network element" not only need encompass a specific facility but "also includes *features, functions, and capabilities*" of that facility. 47 U.S.C. § 153(29). The Eighth Circuit has twice recognized that this language means that network elements are not simply "physical components" of the ILEC network but also includes the operations of the local network, including OSS, shared transport, operator services, directory assistance, etc.[50] In defining an element, the Commission is required to consider whether "the failure to provide such network element[] would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer." 47 U.S.C. § 251(d)(2). It is important to point out that Section 251(d)(2) talks strictly

[50] *Iowa Utils. Bd. v. FCC*, 120 F.3d 753 (8th Cir. 1997), *cert. granted*, 66 U.S.L.W. 3484 (U.S. Jan. 26, 1998); *Southwestern Bell Tel. Co. v. FCC*, No. 97-3389 (8th Cir. Aug. 10, 1998).

about services that a CLEC "seeks to offer" and does *not* speak in terms of element capabilities that the ILEC "chooses to offer".

Therefore, if existing outside copper loop plant has the "capability" of supporting a high-bandwidth digital service that a CLEC wishes to provide—even if the incumbent LEC has for some reason chosen not to take full advantage of that capability—it is fully appropriate and even necessary for the Commission to establish national rules defining the ILEC's unbundling obligation in a manner that would unleash the full capabilities of those loops. Only then will CLECs have true parity of opportunity in providing advanced telecommunications services.

b. Loops and Operations Support Systems (¶¶ 157-58)

Covad's experience confirms that competitive service introduction would be advanced if ILECs would provide CLECs with detailed loop information sufficient to make its own determination of what xDSL equipment and service a loop is capable of supporting. Covad presently uses several DSL technologies to provide the customer with optimal speed and price arrangements based on the capabilities of the underlying facility. It is essential, therefore, that Covad have efficient access to accurate electronic information about relevant operational parameters regarding ILEC constructed and maintained loop facilities.

Covad cannot represent that it has true parity of opportunity in this area today. Incumbent LECs should be required to perform loop maintenance and provisioning tasks in a manner consistent with Section 706. Information relating to loop length, the presence of analog load coils, presence and number of bridge taps, and the presence of a DLC (and the type of DLC) should be catalogued, inventoried, and made available

directly to CLECs through automated OSS. In the event that the ILEC already has automated access to this information, the discrimination issue is already clear-cut, and Covad urges the Commission to investigate (pursuant to its enforcement procedures) instances in which similar access is not granted to CLECs. In cases where automated access to this information is not in place, Covad believes that automated access to this information is part-and-parcel to obtaining access to the full "features, functions and capabilities"[51] of xDSL-capable unbundled loops and must be undertaken by ILECs. "Parity with the ILEC" is not the same as "parity of opportunity". Simply because the ILEC has chosen to support its own digital services with retrograde, manual tasks does not mean that CLECs seeking to provide these same digital services should endure those same laborious processes and manual errors.

c. Loop Spectrum Management (¶¶ 159-62)

Covad applauds the Commission's attention to loop spectrum management issues, because in the past few months, SBC has spearheaded the potential for interference as a means of restricting CLECs' ability to provide innovative services. Incumbent LECs cannot be permitted to install themselves as "Spectrum Czars" to issue bureaucratic ukases that define "permitted uses" and wield effective veto power over CLEC DSL services.

What is missing from the debate on this topic is an acknowledgement that the communications community and the Commission deal with issues of spectrum management and spectral interference every day. Indeed, one of the reasons for creating the FCC was to manage spectral interference disputes between radio broadcasters. As the

[51] 47 U.S.C. § 153(29).

Commission has long been aware in its Title III regulation of radio services, not all interference is harmful interference. If "creation of interference" had been the standard applied to wireline service introduction, there would be far fewer T-1 carriers in existence than there are today, since T-1s using the older AMI protocol are quite spectrally dirty.[52]

Indeed, the Commission has been dealing with interference issues for wireline carriers for over twenty years, under the Commission's Part 68 rules for customer premises equipment. One of the key purposes of the Part 68 rules is to set technical parameters for signals generated by terminal equipment to ensure that those signals do not cause interference, physically damage or impair the operation of the network. Interference and "cross-talk" between lines in adjacent binder groups—the *precise* spectral interference issue presented by some DSL technologies!—are key justifications for Part 68 rules.[53]

Rationales used by ILECs today regarding DSL equipment are reminiscent of pre-divestiture arguments made by AT&T with regard to connection of non-Bell-aproved equipment from 1968 to 1977. Thirty years ago, AT&T—in the wake of FCC investigations into the lawfulness of AT&T tariffs that explicitly tied the sale of telecommunications services to Bell CPE—announced that it would permit non-Bell System CPE to be connected to the network through a Western Electric "protective

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[52] ADSL Forum, *General Introduction to Copper Access Technologies*, http://adsl.com/today_index.html.

[53] Indeed, just last week, the Commission released a Notice of Proposed Rulemaking regarding these very Part 68 rules, recognizing that signal power strength on standard, analog telephone lines can cause service can cause "interference among analog carriers in adjacent binder groups, and unacceptable noise and interference cause by the introduction of excessive voltage into the network, and, contingent upon the specific service involved, pulse amplitudes. " *1998 Biennial Regulatory Review—Modifications to Signal Power Limitations Contained in Part 68 of the Commission's Rules*, CC Docket No. 98-163, Notice of Proposed Rulemaking, FCC 98-221 at n.11 (rel. Sept. 16, 1998).

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coupling arrangement," or PCA. After consumer complaints that these PCAs were expensive and often unavailable, the Commission began nearly a decade of extensive study, and the Bell System fought every step.[54] In 1972, John D. deButts, chairman and CEO of AT&T, said in a speech that "we cannot live with the deterioration of network performance that would be the inevitable consequence of 'certification' [of non-Bell CPE] and the proliferation of customer-provided terminals that would ensue from it."[55] When the Commission implemented the Part 68 rules in 1977, the Commission emphatically recognized that the *competitive* provision of CPE must not be sacrificed simply because some forms of CPE might theoretically cause interference or impairment to other network users. Rather than let interference and "harm to the network" become a bogeyman that would thwart competition, the Commission created a uniform telephone equipment registration system—which required Western Electric equipment to go through the same registration system that competing CPE manufacturers had to use. Then, as now, the Commission recognized the anti-competitive potential that can result when a monopoly provider unilaterally tries to become the "interference police" on the network.

While technology has certainly changed since 1977, the motives of incumbent carriers have not. Covad has observed first hand SBC's attempts to cloak anti-competitive conduct with spectrum management rhetoric. Not surprisingly, SBC seems to have discovered the issue contemporaneously with its own announced entry into DSL service provision. Several months ago, SBC pronounced through an unceremonious

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54 Peter Temin, *The Fall of the Bell System* 63-65 (1987).

55 *Quoted in* Temin at 98.

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ukase that it would shut down ADSL implementations by CLECs in California that were not identical to its own. Fortunately for Covad's existing and future customers, SBC's initial threat not only would have violated its interconnection agreement with Covad, which contained a type of "riparian rights" approach to spectrum management, but also seemed based on an incorrect interpretation of outdated technical material.

Yet, in Texas and other states, SBC soon succumbed again to the temptation to claim other potential "harms to the network" in a manner that would make deButts proud. Covad's understanding of the SBC current position to be as follows: (1) SBC alone defines and determines "harm to the network"; (2) SBC decrees that the technology it plans to deploy is *per se* acceptable; (3) SBC declares that any CLEC implementation of DSL service is inherently suspect; (4) SBC requires that a CLEC first prove to SBC's satisfaction that the CLEC's chosen technology cannot, under any circumstances, cause a condition that might remotely be termed "harm to the network"; and (5) the CLEC is unceremoniously billed to support this SBC-administered "spectrum management program."

SBC's self-coronation as Spectrum Czar would, not surprisingly, allow immediate deployment of SBC's DSL technology of choice while SBC delays the entry of not only DSL competitors but ISDN and T1 competitors as well. The Commission has faced and successfully addressed these issues in the past, when confronted with deButt's monolithic Bell System. Aggressive and immediate *federal* action can effectively remove this looming impediment to entry.

Covad's proposed solution, outlined in Attachment 4, is adaptable and roughly analogous to procedures the Commission has encouraged in the past among the radio

community whereby an industry group, operating on a co-equal basis (thereby incorporating some cost-benefit analysis), develops interference procedures under government oversight. Covad's proposal also would clearly establish that the pending nature of this industry-driven solution cannot be used by incumbent LECs to deny CLECs the ability to provide services using any particular flavor of DSL technology demanded by CLEC customers in the meantime.

As the Commission correctly observed in ¶ 162, frequency issues relating to the provision of DSL services are not limited to interference concerns among physically proximate loops in a binder group or cable. Particular forms of ADSL technology (but, importantly, not *all* DSL technologies) separate frequency bands in a loop into a "POTS channel" at the lower band and a "data channel" at the upper band. Issues surrounding "spectrum unbundling" seem to stem primarily from the inelastic demand for analog POTS services and the more elastic demand for high-bandwidth data communications services—an inherent potential for cross-subsidization that results from using one physical facility to support both services. As a result, it is not surprising that ILEC federal tariffs for ADSL service directly engage in this cross-subsidization between POTS and data, whereby the *entire* cost of the local loop is assigned to the regulated POTS service while absolutely *no* cost of the local loop is assigned to the data service. As long as CLECs are faced with this environment, CLECs should have the ability to place a data signal on top of the ILEC's voice signal.[56] Only then will CLECs have parity of opportunity with ILEC ADSL service offerings.

[56] The Commission has decided to pursue the ILEC DSL tariff filings through separate investigations. Covad is a participant in those proceedings and has filed on the jurisdictional issue upon which the Commission has requested comment. In the second part of that proceeding, as bifurcated by the Commission, Covad anticipates that the Commission will investigate this cost-allocation issue. In that

d. Redefining the Local Loop to Ensure Competitive LEC Access to Loops Capable of Providing Advanced Services (¶ 164)

Covad believes that most, if not all, of the competitive issues faced by CLECs regarding the availability of DSL-capable loops can be addressed by more precise rules that describe the ILEC's obligations to provide these loops. The simple fact that no DSL-capable loop product is generally available in any Bell Atlantic state—even though Bell Atlantic recently a filed an ADSL Service tariff with this Commission—demonstrates that the current rules need to be strengthened.

As a result, Covad has concluded that the current definition of the local loop should be augmented in order to ensure the competitive provision of advanced services. Covad's proposed rules (Attachment 4) take account of the existing and future network typology and foreseeable technical advances.

In particular, Covad believes that spectrum management (¶¶ 159-61), spectral unbundling (¶ 162), uniform standards for equipment (¶ 163), remote terminal issues (¶¶ 165-72), and subloop unbundling (¶¶ 173-76) can properly be regarded as "UNE definition" issues. The Commission has, pursuant to Section 251(d)(2), plenary authority to "determin[e] what network elements should be made available" and is to consider whether "the failure to provide such network elements would impair the ability of the

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future proceeding, Covad will propose the following cost allocation principle to be applied when circuit switched voice (POTS) is provided over the same loop as ADSL: since the lower frequency POTS band comprises 1/100th of the usable frequencies of the loop and the upper frequency ADSL band comprises the remaining 99/100^{ths} of the usable frequencies, costs should be allocated on the same basis. Covad anticipates that, in the interest of treating consumers fairly, regulators will insist that the price of circuit switched voice alone fall to 1/00th of its present price given the ILEC bundled price (POTS and ADSL). Such a decision would alleviate the potentially considerable USF subsidy problem associated with the provision of a subsidized, circuit switched local voice service over the same facility as a non-subsidized high-bandwidth data service.

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telecommunications carrier seeking access to provide the services that it seeks to offer." 47 U.S.C. § 251(d)(2). As discussed above, the Commission has the authority to define an unbundled network element to include all "*features, functions and capabilities*" of a network facility. 47 U.S.C. § 153(29). Covad believes that its proposed local loop unbundling rule includes all of these critical issues and would allow CLECs to opportunity to utilize the full capabilities of existing copper loop outside plant.

A failure to consider spectral issues and standards, remote terminal issues and subloop unbundling in defining DSL-capable unbundled loops would *clearly* "impair" the ability of CLECs like Covad to provide the competitive DSL services of their choosing to all Americans.

In implementing detailed unbundled xDSL-capable loop rules, the Commission must be fully cognizant of the following fact. If advanced services are to be available to all Americans on a reasonable and timely basis, it is not enough to limit CLECs only to those services that the ILECs currently choose to provide. Rather, the principle of parity of opportunity—not to mention the unbundling provisions of the Act—requires that CLECs be given the opportunity to use all of the features, functions and capabilities of the existing network infrastructure[57] in any manner to provide any service, regardless of the ILEC's incentives to stall deployment and competition from new technologies. As stated above, in defining network elements, the Commission is *required* to examine

[57] Covad employees associated with regulatory processes tend to bristle when told by ILEC representatives (usually as part of the denial of a reasonable request to achieve competitive parity), "You can say what you want, but it's *our* network, after all." This is true, but not *entirely* true. The existing network was constructed with funds collected from a captive public by a monopoly service provider largely on a rate-of-return basis. Accordingly, ILECs *administer the existing network as a public trust.* This principle is just one that underpins the 1996 Act and the FCC's implementation of its provisions. It is one too often forgotten or deliberately obscured.

whether "the failure to provide such network elements would impair the ability of the telecommunications carrier seeking access *to provide the services that it seeks to offer*"—not just the services that the ILEC chooses to offer. 47 U.S.C. § 251(d)(2).[58]

If CLECs are artificially restricted in their ability to provide particular consumers with flavors of xDSL that those consumers demand simply because ILECs choose not to deploy the requisite form of xDSL, then a valuable national resource (the existing local loop infrastructure) will not be used to best advantage to bring advanced services to all Americans. Put another way, Covad does not want to provide only the services that ILECs want to provide, it wants to provide the services Americans demand.

e. Unbundling Loops Passing through Remote Terminals (¶¶ 165-76)

The Commission has correctly recognized that one of the critical areas where its plenary authority in defining UNEs can significantly impact broadband deployment is with regard to loop unbundling requirements. Covad supports the Commission's tentative conclusion that "providing an xDSL-compatible loop as an unbundled network element is presumed to be 'technically feasible' if the incumbent LEC is *capable* of providing xDSL-based services over that loop." *NPRM* at ¶ 167. The Commission's proposal that the *capability* of providing xDSL services is the key to defining this element—because technical feasibility (and the Commission's mandate in Section 252(d)(2)) does not depend upon whether the ILEC has actually chosen to deploy a

[58] It is important not to understate this issue. Recent ILEC deployment of xDSL services has focused upon ADSL, an asynchronous service where the user has a large amount of "downstream" (to the home) bandwidth but has only limited "upstream" (away from the home) bandwidth. The fact that ILECs are now focusing upon ADSL deployment is no doubt related to the fact that this deployment does not risk cannibalizing significant ILEC revenues from T1, fractional T1, and frame relay services.

particular service. The Commission's proposal in ¶ 167 would implement the standard of parity of opportunity described above.[59]

Covad also supports the Commission's initiative in ¶ 169 to address directly issues related to providing xDSL services to customers served by remote terminals, or RTs. The objectives of parity of opportunity and broadband deployment may be significantly thwarted when ILECs control facilities (such as terminal DSLAMs) that act as potential choke points in the digital transmission path. Currently, Covad has two options when faced with an order from a customer living in an area served by an Integrated Digital Loop Carrier system (IDLC): (1) obtain a twisted pair "work around" from the ILEC (often at considerable additional cost), which will increase the length of the copper run from the end user and decrease the transmission speed accordingly;[60] or (2) should the IDLC support ISDN, pay the ILEC to install an ISDN-compatible line card in the remote terminal that supports IDSL (ISDN DSL) service, which has a maximum speed of 144 kbps. Clearly, remote concentration devices have a significant effect upon the bandwidth of services that Covad is able to offer.

Fortunately, next generation Digital Loop Carrier ("DLC") systems may be designed around remote DSLAMs that can support multiple DSL technologies. DSL equipment vendors are actively developing suitable digital line cards that may be inserted into these DLCs. As a result, a fiber-fed, next-generation DLC might be able to support

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[59] While Covad supports the Commission's concern articulated in ¶ 172 about "comparative disadvantage" between ILEC and CLEC xDSL offerings, Covad again states that "parity of service" is not sufficient to achieve the Commission's goals. In order for CLECs to deploy the broadband services that Americans want—not just the services ILEC monopolies want to deploy—CLECs must be granted "parity of opportunity" to make available the xDSL service of its choosing. Section 251(d)(2) requires no less.

[60] In ¶ 170 of the *NPRM*, the Commission correctly observed that this work-around would impact available bandwidth.

more bandwidth than a simple, end-to-end copper loop, because the fiber-fed DLC shortens the copper loop length.[61]

Nevertheless, deployment of these next-generation DLCs and DSL line cards is currently at the discretion of the resident ILEC, which will no doubt maintain its legendary Bellhead mentality, complete with the incentive not to deploy equipment that would interfere with existing T1 and ISDN revenues. Over time, the competitive issues associated with remote terminals and DLCs are not at all trivial, because the number of loops served by DLCs is increasing as fiber is deployed towards the periphery of the network.

Mandating that ILECs provide CLECs with "collocation" at remote terminals (suggested by the Commission in ¶ 170), as noted earlier, is an option that CLECs seeking to provide DSL services should have. However, it is not likely to have much immediate, near-term impact upon deployment, because substantial remote terminal collocation would involve a tremendous number of collocation potentially complicated by physical space, access, rights of way, and local zoning and permit issues.[62] In addition, the Commission's subloop unbundling proposals (¶¶ 173-76) are, as noted earlier, another option for CLECs seeking to provide DSL services should have, and Covad has proposed draft rules for their implementation.

Covad suggests that the FCC focus its initial efforts in this proceeding on resolving remote terminal issues through the unbundled loop definition process, with

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[61] Another potential benefit is a significant reduction in the potential for spectral interference, as long copper cable runs to the serving wire center would be reduced.

[62] The Commission need not be reminded of the long and drawn-out experiences with wireless tower siting issues (local municipalities), pole attachments (electric power companies), and inside wiring (landlords).

particular attention to the impairment standard of Section 252(d)(2). Specifically, Covad proposes that the definition of the local loop element include the obligation of the ILEC to install, upon request and where technically feasible, a suitable digital line card of the CLEC's choosing at a remote terminal and provide demultiplexing capability at the relevant central office. This requirement does not require that the ILEC provide in any way a "superior" service than the ILEC currently provides itself. Indeed, the process of installing a suitable line card at a remote terminal is *precisely* the sort of work that ILECs perform at those terminals *every day* in providing ISDN, analog or even T-1/HDSL services. Simply applying this principle to next-generation DLCs and DSL line cards of the CLEC's choosing is, in Covad's opinion, the swiftest means of ensuring broadband deployment to these neighborhoods.

In addition, Covad's proposed rules (Attachment 4) would incorporate the following principles—

- Providing an xDSL-compatible loop as an unbundled network element is presumed to be "technically feasible" if the incumbent LEC is capable of providing xDSL-based services over that loop;
- The incumbent LEC shall bear the burden of demonstrating that it is not technically feasible to provide requesting carriers with xDSL-compatible loops; and
- The competitive LEC may request any "technically feasible" method of unbundling the DLC-delivered loop, and the incumbent LEC is obligated to provide the particular method requested.

Covad urges that the Commission to articulate its final conclusions with technical precision, so as to avoid ILEC interpretations that would limit CLEC access to facilities necessary to support only the services ILECs provide. As stated above, Covad should have the same opportunity to utilize full features, functions and capabilities of the outside plant transmission facilities, even if the ILEC chooses not to exploit those capabilities. Any decision to the contrary would "impair" the ability of Covad to provide the service "it seeks to offer." 47 U.S.C. § 251(d)(2).

In addition, Covad believes public policy should strongly support the deployment of remote DSLAMs capable of supporting more than one technology. To do otherwise, assuming the availability of this equipment in the reasonably near future, would be to severely limit future innovation. Technology "lock-in" could occur because the subsequent acquisition and installation cost would deter speedy replacement. Therefore, unless the Commission adopts appropriate rules, the existing ILEC may, depending on the loop lengths associated with a particular remote terminal, be able to deny end users the ability to obtain any DSL technology other than the one it chooses to deploy in a one-technology-only remote DSLAM.[63] Accordingly, if the objective is to hasten the deployment on a competitive basis of advanced services to all Americans, the Commis sion should adopt rules that will apply in a variety of circumstances—

- Where ILECs will deploy remote DSLAMs in support of DSL services, those DSLAMs should support multiple DSL technologies not simply the one selected by the ILEC.

[63] ADSL bandwidth may be a blessing today, but another DSL technology may better meet demand for the streaming video component of an internet picture phone, or for the at-home worker who needs to upload large files, or for demands commonplace in 3 to 5 years that are not presently imagined.

- Where ILECs will not deploy remote DSLAMs in a timely manner, CLECs must be afforded the opportunity to provide DSL service optimally depending on the circumstances. This may require a copper build around, or, if demand warrants it, subloop unbundling, physical collocation of a CLEC DSLAM within a remote terminal, the construction of a CLEC remote terminal in the existing right of way, and upstream transport provided by a third party.

Covad has proposed rules that it believes meet these objectives. The ILEC 706 mantra—"We must not be forced to unbundle our DSLAMs or we will stamp our collective foot and not deploy them"—is not simply about central offices. As more fiber is deployed towards the periphery of the network and technology development and deployment allows for DSL transmission through digital loop carriers, the potential bottleneck in the provision of advanced services will expand from the central office to encompass the remote terminal and its immediate vicinity.

f. Effects of Additional Requirements for Local Loops (¶ 177)

As discussed above in the context of additional collocation requirements, Covad is very concerned that even if the Commission writes detailed xDSL-capable loop rules, ILECs will force CLECs to play a waiting game while the ILEC "prepares a tariff" and challenges those requirements in court. As a result, Covad encourages the Commission to make clear that its rules are effective immediately upon the effective date of the Order, and that ILECs shall immediately be required, upon release of the Order, to re-negotiate existing interconnection agreements at the request of CLECs. The Commission should clearly state that an ILEC's unwillingness to effectuate any necessary changes to existing

interconnection agreements within thirty days of a CLEC's request shall be deemed to be a *prima facie* case of bad faith negotiation and a violation of a Commission order.

The Commission also should make clear that to the extent that any state unbundling requirement, tariff, arbitration decision, or state or local legal requirement conflicts with the Commission's national minimum standards, those state or local requirements are immediately preempted.

C. Additional Unbundling Obligations

In ¶ 180, the Commission asks for comment on additional specific requirements for unbundling network elements used by incumbent LECs in the provision of advanced services. Covad proposes that the Commission order ILECs to provide "DS3 Links" on an unbundled basis. *See* Attachment 4, Section 51.319(h).

DS3 links are dedicated, point-to-point digital circuits that provided bandwidth of 45 Mbps. Incumbent LECs commonly provide DS3 links to their own advanced services customers, including Internet Service Providers and other end-users of high-bandwidth services. In particular, an Internet Service Provider might order a DS3 link between its premises and the point-of-presence of another telecommunications carrier or major Internet POP. As the Internet grows and expands, the local bandwidth needs for ISPs and corporations will cause there to be an ever-increasing demand for DS3 circuits.

Provision of a DS3 Link on an unbundled basis is clearly technically feasible. Indeed, Bell Atlantic provides this unbundled network element in the State of New York to CLECs—but it does not make this network element available on an unbundled basis to CLECs in any other Bell Atlantic service territory. The fact that Bell Atlantic flatly refuses to provide DS3 Links to requesting carriers on an unbundled basis in other Bell

Atlantic states is yet another example of the ILEC "trench warfare" attitude that slows down deployment of advanced services throughout the nation.

Requiring ILECs to provide DS3 Links as unbundled network elements meets the standards of Section 252(d)(2) of the Act. First, provision of this element is not "proprietary" as that term is used in Section 252(d)(2)(A)—these links are provided by ILECs to customers today, oftentimes on a tariffed basis. Bell Atlantic provides DS3 links on an unbundled basis in the State of New York, and DS3 circuits are commonly found in ILEC FCC and state access tariffs.

Second, the failure to provide access to DS3 Links "would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer." 47 U.S.C. § 251(d)(2)(B). If a CLEC wishes to offer DSL services to a business that want to support telecommuters or an ISP's customers, it will need to connect that business or ISP to its DSL network with a high-bandwidth, DS3 connection. If that business is not on top of a fiber ring constructed by a fiber-based CLEC, the ILEC may be the only option available to connect that business to the CLEC's DSL network. Without access to DS3 Links from the ILEC, the ability of the CLEC to provide the advanced telecommunications services "that is seeks to offer" would clearly be "impair[ed]" as that term is used in Section 251(d)(2)(B). Parity of opportunity mandates that the Commission rectify the spotty availability of DS3 Links on an unbundled basis nationwide.

D. The Commission's Separate Affiliate Proposal

As made clear by Covad's testimony to the Commission's Broadband Forum on July 9, 1998, Covad believes that when an ILEC provides xDSL services, it should be

required to go through the same procedures and processes that Covad and other CLECs go through. If this means that Covad must obtain physical collocation arrangements through expensive cage facilities, the ILEC should have to incur the same expense and time delay. If this means that Covad must deal with antiquated and manual loop information, the ILEC should have to do the same. If Covad is provided with a clunky, GUI-based OSS interface, the ILEC should face the same OSS when it wants to provide DSL services.

Therefore, while Covad applauds the Commission's focus on structural solutions to the structural problems caused by ILEC control over essential facilities such as local loops and central office space, Covad has two fundamental objections to the Commission's separate affiliate proposal.

First, the construct is voluntary. If good public policy dictates a separation of function (essential network facilities from DSL service provision) at this time then good public policy *requires* such a separation. If the Commission has the jurisdiction to oversee the implementation of a separate "something", then the Commission has the jurisdiction to order its implementation. Indeed, there is extensive unremediated court criticism of the Commission for failing to compel sufficient separation to support competitive objectives.[64] Separate affiliates in name only but not in practice are window

[64] The FCC effort to eliminate the requirement that the Bell Operating Companies provide enhanced services through a structurally separate affiliate met with stiff resistance. In *California PUC v. FCC*, 905 F.2d 1217 (9th Cir. 1990), the United States Court of Appeals for the Ninth Circuit vacated and remanded the FCC's *Computer III Orders*. The court concluded that the FCC had failed to demonstrate that the "changed circumstances" relied on by the Commission had, in fact, reduced the risk of BOC cross-subsidization. On remand, the Commission modestly strengthened the non-structural safeguards and re-adopted its decision to lift structural separation. On appeal, the Ninth Circuit again vacated the FCC's order. This time, the court found that the FCC had failed to demonstrate that its non-structural safeguards were adequate to prevent the BOCs from discriminating against rival ESPs. 39 F.2d 919 (9th Cir.1994). In particular, the court noted that the FCC had failed to consider the fact that, in the years since the adoption of the *Computer III Orders*, the Commission had significantly "watered down" the requirement that ONA

dressing—they will give the Commission the impression that it has "done something" while in reality it has done nothing.

Second, the proposal does not sufficiently separate ILEC functions. In order to ameliorate these inherent structural problems, a *truly* separate entity, with separate equity ownership, is required, not the "we hope the ILECs will go for this" separate affiliate proposed by the Commission.

In the *NPRM*, the Commission proposes seven criteria establishing the framework under which an ILEC advanced services affiliate would not qualify as an ILEC, and would not thereby be subject to section 251(c) obligations. Covad believes that the degree of separateness is insufficient. The principle purpose of the proposal is to eliminate (or greatly reduce) the present incentives an ILEC has to favor its own provision of DSL service and to discriminate against Covad and other CLECs in their access to and use of essential elements such as collocation space and local loops.

In order to achieve that goal, the separate entity should be *truly* "truly" separate. - *NPRM* at ¶ 92. This means not only "independent operation" as the Commission suggests, but a independent corporation with no sharing of officers, personnel, facilities or other assets, and an independent board of directors, made truly independent (and legally liable for their actions) by public stock ownership of the entity. Frankly, Covad is concerned about the ability and long term willingness of the Commission to enforce sufficient separation and would prefer that the separation be largely self-enforcing, which shareholder derivative suits caused by separate equity ownership could provide.

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lead to the fundamental unbundling of the BOC's local networks. Despite the court's decision, the Commission has continued to allow the BOCs to provide enhanced services on an integrated basis. provided the carriers file individual comparably efficient interconnection plans for each enhanced service.

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If the Commission is not willing to require complete structural separation, then Covad believes that other steps should be taken to help open up ILEC networks—in *all* cases, even if the ILEC provides DSL services on an integrated basis.

- In providing their own integrated DSL service, ILECs should order DSL loops services through the same OSS and interfaces that CLECs must order unbundled DSL loops. ILECs should not be allowed to hide-behind integration of services and provide itself a better OSS and interface than CLECs receive.
- All ILEC provision of *any* DSL service (regardless of integration/separation status) prior to the general availability of xDSL-capable loops to CLECs throughout the service territories of that ILEC will be investigated immediately by the Commission, would be considered a *per se* violation of discrimination standards, ultimately punishable by forfeitures and other Commission enforcement tools.
- If ILECs provide DSL services on an integrated basis, they must permit CLECs to place DSL equipment in ILEC central offices at parity with the manner the ILEC has placed that DSL equipment in the central office. If the ILEC places that equipment in the office without use of a collocation cage, CLECs should be permitted to place similar equipment in that office without a cage.
- The Commission should swiftly adopt the collocation and loop proposals of the *Notice*, including immediate adoption of cageless physical collocation and more-detailed xDSL-capable loop rules. The sooner the Commission acts, the

sooner these rule changes become part of the Section 271 "competitive checklist."

- As discussed more fully below, the Commission should strongly state that it will not entertain *any* petition for "limited" interLATA relief from any ILEC that has not fully-implemented these collocation and DSL-loop rules. ILECs should not be given the ability to fight new collocation and loop rules in court while they file petition after petition for "limited" interLATA relief.

Since the Commission has essentially established the "separate affiliate" proposal as an option to incumbent LECs, Covad eagerly awaits reviewing comments by the incumbent LECs as to whether they would indeed "opt in" to such a construct. As a result, Covad reserves the right to provide input on these incumbent LEC comments at the reply stage of this proceeding. However, the ultimate solution to the structural problems at issue is a *real* structural solution—a solution that, unless mandated by the Commission, Congress or the courts, may only come when ILECs realize that facilitating, not fighting, CLEC use of their outside plant may be their only survival technique. That day has not yet begun to dawn.

E. Limited InterLATA Relief

The Commission has requested comment on criteria to evaluate RBOC requests for targeted LATA boundary changes and on the existence of other forms of interLATA relief that should be considered. *NPRM* at ¶190.

Covad's principal concern is that after issuance of an Order in this proceeding, RBOCs not be given the ability to game the process by appealing new collocation and unbundled loop rules in court while they file petition after petition for "limited"

interLATA relief pursuant to the Commission's proposal. Even after those appeals are exhausted, RBOCs still may stall further collocation and loop requirements at the state level, by requiring CLECs to await the filing of "tariffs" for these services.

Accordingly, Covad proposes that RBOCs be granted no interLATA adjustments, or interLATA "relief" of any kind by the Commission until such time as the Commission rules established in this proceeding are actually put into region-wide effect by that same RBOC. RBOCs cannot be permitted to file appeals of market-opening initiatives that stem from this proceeding while they take advantage of any "relief" they obtain from this proceeding. In addition, RBOCs should not be permitted to request "limited relief" in some of their service territories while they affirmatively thwart competition in their other service territories.

III. CONCLUSION

The following exchange took place this spring between the Vice President, located at the podium of a conference sponsored by the Economic Strategy Institute in Washington DC, and the Chief Executive Officer of Intel, then in Bejing. Mr. Grove joined the conference both visually and auditorily via satellite.

> Mr. GROVE: From a computing standpoint the Internet is a data network. It's a network all of its own. Today, that's not how we implement it. Today, the Internet is run on a combination of commercial data networks and we borrow part of the voice networks to complete the cycle. But if God got interested in creating the Internet, he would not create it the way we have it today. [Laughter] He would have used new approaches, exactly as you (Vice President Gore) pointed out we need to do ourselves. And the Internet would be a network separate from and completely differently designed, than the voice network that we borrow from today…
>
> VICE PRESIDENT GORE: You said "*He* would have created differently." That's a little controversial these days. [Laughter] …

> MR. GROVE: Well, I will take the Creator of the Internet in any gender that he or she might show up in. [Laughter] *Provided he or she brings a broadband last mile connection with her.* [Laughter]

While the Commission is hardly the "Creator of the Internet", the Commission does have the power to facilitate the provision of advanced services to all Americans on a competitive basis. In effect, the Commission *can* "bring a broadband last mile" to the American public, but only if the Commission takes the appropriate market-opening and incentive-based regulatory steps. Covad requests that its discussion of policy issues and proposals for final rules be given serious consideration in this proceeding.

Respectfully submitted,

[submitted electronically]

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Dated: September 25, 1998

Attachment 1

Affidavit of Thomas J. Regan
Covad Communications Company

Before the Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Deployment of Wireline Services Offering	)	CC Docket No. 98-147
Advanced Telecommunications Capability	)	
	)	

AFFIDAVIT OF THOMAS J. REGAN
ON BEHALF OF COVAD COMMUNICATIONS COMPANY

Witness Qualifications

1. My name is Thomas J. Regan, and I am the Director of Collocation and Operations for Covad Communications Company ("Covad"), a Silicon Valley-based start-up competitive local exchange carrier. I have held this position since March 31, 1997.

2. Prior to joining Covad, I was employed at Pacific Bell for 27 years. At Pacific Bell, my most recent position was Expanded Interconnection Service Product Manager, reporting to the Executive Director. In this capacity, I managed a 300% increase in collocation requests in 1996. I was responsible for the statewide management of Pacific Bell's offering and implementation of physical collocation by Competitive Local Exchange Carriers (CLECs) of their own CLEC equipment in Pacific Bell's Central Offices.

3. I directed Pacific Bell's collocation teams involving personnel from Pacific Bell's Operations, Engineering, Real Estate and Security departments with respect to the

construction of more than 120 collocation cages in approximately 70 central offices ("CO").

4. I prepared Pacific Bell's complete market financial package for the FCC's and the California Public Utilities Commission's regulatory approvals on each new request for physical collocation in a non-tariffed CO (that is, a CO that previously had no collocators and had not been configured for physical collocation). I also led Pacific Bell's team in the preparation and costing of new cross-connect products for physical collocators, as well as related tariffs. In addition, I managed Pacific Bell's collocation and billing and account crediting process for collocating CLECs.

5. Prior to commencing my role as product manager for collocation and expanded interconnection at Pacific Bell, I was a senior engineer for Pacific Bell responsible for a variety of large-scale network engineering projects. I participated in the deployment of new switch-based products and developed new processes to facilitate the introduction of new products throughout the Bay Area. Significant projects in this position included leading the implementation of 15 major Advance Digital Technology projects; coordinating the engineering and provisioning of customer requests for large Centrex, Centrex-IS, PRI ISDN, Voice Mail, SDS 56 and other tariffed products; and coordinating Pacific Bell's engineering and operations activities to deploy major new network products, serving as the Network Technology Department's point of contact for field trials and first office applications of new switch technology.

6. In addition, I previously served as Pacific Bell's Service Manager for Bank of America's account in San Francisco between 1986 and 1990. I was responsible for ensuring Bank of America's satisfaction with all voice and data services which included

63 data networks, three data centers, two alarm centers, a merchant services center, a business service center and a money transfer center. I completed several key voice and data projects for Bank of America, including the six phase ATM, alarm consolidation, point-of-sale transfer, circuit inventory identification and rehome for north and south locations, fiber surveillance, and ADN on the California Data Network, and reduced error rates on the Bank of America voice network and converted it from analog to digital statewide, and improved its point of sale network capabilities and efficiency. Prior to 1986, I held a number of other positions at Pacific Bell, including the following: Customer Service Supervisor; Division Staff Training Facilitator; Distribution Services, Installation and Prewire Supervisor; and Distribution Services Cutover Supervisor.

7. I am currently responsible for all of Covad's collocation arrangements nationwide and supervising a substantial staff of highly qualified individuals with literally dozens of years experience with collocation and incumbent LEC operations. Over the past year, I have been responsible for obtaining physical collocation arrangements with Pacific Bell, GTE, Ameritech, Bell Atlantic and U S WEST. Covad currently has several hundred collocation requests in varying stages of being processed by incumbent LECs. I was a key Covad negotiator on the cageless physical collocation terms included in Covad's interconnection agreement with U S WEST Communications, Inc. in the State of Washington.

Covad's Physical Collocation Requirements

8. When Covad decides to enter a market, it undertakes a "blanket" physical collocation strategy, involving all offices in the relevant market. For example, in the Baltimore/Washington corridor, the geographic spread of Covad's collocation

applications range from as far south as Fredericksburg, Virginia to as far north as Westminster, Maryland. Unfortunately, Bell Atlantic is currently claiming that there is "no space" for physical collocation in many of these offices, including Frederick, Maryland, and Waldorf, Maryland.

9. The equipment Covad and, presumably, other similar CLECs focused upon DSL services, collocate in an ILEC central office does not take an inordinate amount of space or power. Covad physically collocates DSLAMs ("Digital Subscriber Line Access Multiplexers") (MCS: 14.38" x 12" x 21.25"; Wt: 74 lbs and LCS: 12.13" x 12" x 21.25"; Wt: 65lbs), and other cabling and equipment which it uses to access and interconnect with unbundled network elements such as local loops and dedicated transport and manage its services over such loops and transmission facilities. Covad's equipment is rack-mountable. Covad typically occupies two bays in a CO, and those two bays can collocate sufficient equipment in order to serve 500 – 1,000 subscribers, sufficient to meet Covad's near term needs. A bay of equipment is 23 inches wide an approximately one foot deep. Each year, technological improvements allow carriers like Covad to serve more customers with less equipment. Therefore, Covad's needs for physical collocation space in any one CO are relatively modest. By way of comparison, Covad's equipment is the size of a stereo system, while many voice-oriented CLECs have often collocated DLC (Digital Loop Carrier)-type equipment that is more typically the size of a refrigerator.

10. Since the passage of the Telecommunications Act of 1996 (the "Act"), which requires physical collocation and makes it possible for CLECs to use unbundled network elements to provide competition over wide geographic areas, new companies such as

Covad have adopted a strategy of physically collocating in dozens of ILEC central offices. ILECs are now facing unprecedented demand for physical collocation.

Current ILEC Physical Collocation Options are Inadequate

11. Today, ILECs generally require CLECs to collocate equipment in a segregated collocation room or area, even though construction of these segregated collocation rooms are very costly, time-consuming, and prevent CLECs from collocating in a number of central offices because of ostensible space considerations. Covad's agreement with U S WEST in the State of Washington is, I believe, the first time that an ILEC has agreed to provide a CLEC with the ability to physically collocate individual bays of equipment in the ILECs central office without resort to construction of a segregated collocation room or area.

12. Under cage-based collocation practices, the steps which precede the actual installation of equipment are extremely time consuming and vary with the central office at issue. Essentially, the implementation of cage-based collocation involves two fundamentally different scenarios. In central offices where there are no existing physical collocators ("Case A"), the CO does not have a pre-conditioned or configured collocation room suitable for cage-based physical collocation. In the second case ("Case B"), the CO has been surveyed and the cage-based physical collocation room has already been segregated and prepared for collocation (i.e., a separate entrance for the collocators has been built, including any new staircases, doorways, hallways, and security card access) and may be pre-built with the necessary infrastructure (iron-work and HVAC) in place. (In Case B, empty cages may or may not have been built.) In most instance, a POT-Bay

("Point of Termination") must be engineered, furnished and installed (EFI-ed) before a new collocating carrier such as Covad can provide service from the office.

13. If a CO already has physical collocation facilities for other parties (Case B), then the infrastructure such as space design and related engineering, and any required reclamation and lay out, and air conditioning are already in place. It should be a relatively simple to provide an additional cage to a CLEC and certainly should not take four months, which is what some ILECs commit to.

14. Covad's focus is on collocation in residential central offices which frequently fall into Case A—that is, the offices that do not have any pre-existing physical collocators and therefore no existing segregated physical collocation room. As a result, Covad is often asked to pay for (and wait) for construction of the entire infrastructure that cage-based collocation mandates must be in place in a segregated section of the central office. This process is expensive and time-consuming. An appropriate section of the central office must be identified and designated for such cage-based collocation, typically based on the ILEC's ability to create collocation space not only for Covad for multiple collocators. Any space reclamation, such as removal of obsolete equipment and/or relocation of other non-CO essential uses such as administrative, recreational, storage and staging functions, must be performed. HVAC (air-conditioning) and ironwork must be provided. Providing for the entire infrastructure for cage-based physical collocation is a significant, non-trivial project that requires the ILEC to expend considerable resources and time to carry out. Many times, Covad has been asked to pay for the construction of segregated rooms much larger than needed actually by Covad—in one office in the District of Columbia, Covad has been asked to construct a room the size of 2100 square

feet. The room construction charges can be extraordinary—Covad has been presented with quotes in excess of $100,000 and up to $200,000 for doing this room construction work in some central offices.

15. In many cases (such as Bell Atlantic "South", or pre-merger Bell Atlantic states), the ILEC charges the first CLEC that collocates the entire up-front infrastructure and other non-recurring charges for building this segregated room. ILECs claim that they later refund a portion of the charges to the first collocator after new collocators collocate in that CO. In this way, the first collocator faces the most severe barrier to entry, and subsequent collocators face a less severe barrier to entry. In a very real sense, these terms present a substantial barrier to entry upon the first collocator. Even if multiple collocators eventually enter, they are all placed at a disadvantage vis-à-vis the ILEC because the ILEC continues to collocate its own equipment in those very same offices on a cageless basis.

Covad's Cageless Physical Collocation Proposal

16. As described in Covad's Comments in this proceeding, cageless physical collocation is a form of physical collocation in which a requesting telecommunications carrier has the ability to place at least one bay of its own equipment used for interconnection or access to unbundled network elements within or upon already-conditioned floor space of an incumbent LEC's premises. Under this arrangement, requesting carriers may obtain single-bay increments of already-conditioned floor space in the ILEC premises, use all the features, functions and capabilities of collocated equipment, and enter the ILEC premises (subject to reasonable security terms and conditions) to install, maintain and repair such equipment. Cages or segregated rooms or

areas would not be built, unless requested by the CLEC. Reasonable security measures would be undertaken at the expense of the party desiring those security measures. In the event that insufficient already-conditioned floor space does not exist in the office (which would be rare, in my opinion), the incumbent LEC is required to condition sufficient floor space to accommodate the CLEC's request but may only charge the CLEC the pro-rata share of those conditioning charges. Therefore, if the ILEC feels necessary to condition 300 square feet to accommodate a CLEC's request for 30 square feet of floor space, it should only be permitted to charge the CLEC 10% (30/300) of those conditioning costs.

17. Fundamentally, cageless physical collocation offers CLECs true parity of opportunity to place equipment in a CO. When the ILEC installs new equipment in a CO, such as its own xDSL equipment, it simply places its equipment in any available space in the CO that has been pre-conditioned (i.e., has the necessary infrastructure) and that can accommodate the equipment. Such vacancies typically exist in scattered parts of the CO within a large, previously conditioned section of the CO. Cageless physical collocation is far more space efficient, less costly for all, less time-consuming for all and will serve the public interest in a vastly superior manner.

18. Cageless physical collocation is technically feasible in all aspects, including operational, technical, security and administrative aspects. Indeed, outside of the ILEC central office environment, forms of cage-less physical collocation are common in the industry, in particular between and among CLECs. For example, in Covad's regional data center in San Jose, California, MFS, TCG and Brooks Fiber collocate fiber transmission equipment on a cage-less basis. In addition, since divestiture, AT&T has

shared common floors with the RBOCs in COs, where the demarcation between AT&T floor space and the RBOC's floor space is a painted line on the floor of the CO. Thus, since the RBOCs can share CO floor space as a part of a condominium arrangement with AT&T, they should do the same for a CLEC like Covad that requests a cageless arrangement. Intermedia, a CLEC, provides cageless physical collocation in its offices in Florida and New York, and manages security by way of security escorts. In the competitive environment, carriers go out of their way to accommodate physical collocation and have every incentive to develop innovative solutions. The flat refusal of many ILECs to provide alternative arrangements like cageless clearly reveals that they do not now operate in a competitive market.

19. Indeed, based on my experience with Pacific Bell and my interaction with other ILECs, ILECs have opposed cageless physical collocation at a corporate policy level. Until recently, the lack of cageless physical collocation did not matter because, even in California, fewer than 10% of all central offices received any physical collocation requests prior to passage of the 1996 Act. However, now that CLECs like Covad, formed after the passage of the 1996 Act, are seeking widespread physical collocation, the Commission should address this matter and require ILECs to reform the mandatory nature of cage-based physical collocation. In particular, this issue has a strong impact in COs that serve residential neighborhoods, which are a significant portion of Covad's entry strategy.

20. Cageless physical collocation also will advance other policy objectives of the Commission. Since passage of the Act, ILECs have faced unprecedented demands for physical collocation. This demand will only increase, especially given a ruling by a

federal court that essentially ruled that CLECs desiring to "combine" unbundled network elements (such as loops, switching and transport) must do their own "combining"—presumably through physical collocation space in a central office. As long as those conditions exist, ILECs must be prepared to receive—and provide—hundreds upon hundreds of requests for physical collocation that will swamp their current staff. As described above, the process of segregated room and cage construction is time-consuming not only for CLECs but also present a drain on ILEC resources.

21. Instead of arguing the technical feasibility of cageless, the only substantive justification ILECs have presented to Covad in refusing to provide cageless physical collocation are security concerns. I agree with the Commission's tentative conclusion in this proceeding that security issues surrounding cageless can be resolved by carriers.

22. Covad is currently implementing cageless physical collocation in several central offices in Seattle. In those offices, Covad's equipment is not being placed in a segregated collocation room, and Covad's employees have access to the central office and SPOT bays. Covad applies for, and Covad employees obtain, valid identification and access cards for Covad employees that would have access to its collocated equipment. I believe that U S WEST may perform a background check, at its own expense, on these Covad employees. Covad employees enter the U S WEST office using a swipe- or key-card entry system, and those employees must leave the office from the same door they entered. These are reasonable security requirements that Covad would accept from any ILEC. U S WEST believes its security concerns can be addressed in this simple fashion.

23. ILEC insistence that collocation cages are the *only* possible solution is unreasonable. First, alternative, less-expensive collocation arrangements other than cages

can adequately address central office security concerns. ILECs can pay for security escorts that will ensure that Covad employees work only on Covad equipment. ILEC equipment is often alarmed anyway, to prevent or deter unauthorized work on that equipment. Key-card entry systems, such as the Covad/U S WEST cageless arrangement, can be utilized. A number of other potential solutions are possible.

24. In many cases, the construction of a cage does not make the ILEC central office any more secure than it would be without the cage. In some offices, CLEC employees must (or can) walk through the central office—past ILEC equipment—to get to a segregated collocation room. In these cases, the cost of the cage is preposterous and does not protect ILEC equipment at all, and ILECs would still be expected to resort to a security escort system if they were so concerned about security.

25. Covad's proposal would resolve security concerns on a CO-by-CO and nondiscriminatory basis. The party desiring security would be required to pay for that additional security measures. As Covad describes in its Comments in this proceeding, it is important that CLECs not be placed under more restrictive security or access restrictions than ILEC employees or contractors. ILECs manage the entry and exit of dozens of telecom equipment and other contractors in their central offices, and they already maintain security arrangements and qualifications for those employees or contractors. In Virginia, Bell Atlantic manages access to their central offices of no fewer than fifty-two vendors or contractors. These vendors are not certified by the Virginia State Corporation Commission, and Covad has learned in discovery that Bell Atlantic does not engage in background checks of employees of those vendors and contractors. In New York, Bell Atlantic maintains a portfolio of 57 independent contractors or vendors

that have similar access. There is no reason that CLECs should be singled out for special, more restrictive access policies.

26. In addition, no security arrangement imposed by the ILEC should unduly restrict or hinder the ability of a requesting telecommunications carrier to maintain a high level of customer service, including, but not limited to, security arrangements that would unduly restrict, hinder or effective prohibit the ability of a CLEC from repairing collocated equipment at any time to correct a service outage or impairment as soon as possible. Only common sense dictates that if a CLEC's customer is out of service or experiencing a problem, the CLEC should be able to solve that problem immediately, on a 24 hour a day, 7 day a week basis.

27. When proper incentives are in place for security arrangements—that is, when the party desiring security pays for those additional security measures, when access restrictions are nondiscriminatory and do not impair customer service —I believe that security will disappear as an issue. In the competitive sphere, industry practice demonstrates that they can be resolved. It is reasonable for this Commission to require ILECs to conduct business in the same manner as competition-driven CLECs. The simple fact is that non-interference with each other's equipment is the industry norm, that each carrier's personnel who work in COs typically have had significant industry experience and, like myself, have often been long-time employees of the ILEC or managers and supervisors of teams of personnel who work in COs. Given the industry norms (and given that the consequences for interfering with the operation of another carrier's equipment are severe), I have no hesitation in stating that the previously taken corporate position of ILECs against cageless physical collocation is based on concerns

other than genuine operational, technical or security concerns. Instead, I believe that the position ILECs have taken against cageless physical collocation is based upon outdated cage-based procedures initially designed years ago to permit access by fiber-based CLECs into a limited number of ILEC central offices. With the passage of the 1996 Telecommunications Act, CLECs have a different set of collocation requirements, with a focus on time-to-market that involves less equipment and ready access to unbundled local loops and other elements.

28. Adoption of Covad's cageless proposal also will help alleviate the intolerable situation in which ILECs claim that "no space" exists in literally dozens of central offices for collocation. Covad's cageless physical collocation proposal only requires that the ILEC find room in the office for perhaps two bays of equipment, as opposed to finding room for an extensive, segregated collocation cage room that may be as large as 2100 square feet. As I said earlier, the equipment Covad seeks to collocate is relatively small and does not have excessive power requirements. It is my years of experience with collocation and familiarity with ILEC central offices, these "no space" problems stem entirely from ILEC requirements for large segregated collocation rooms and cages and *not* from the fact that there is "no space" for the equipment Covad seeks to collocate.

29. In residential offices where little or no collocation has occurred yet, cageless would present a tremendous cost and time saving to both Covad and the relevant ILEC. Cageless collocation eliminates the need of cage construction and can reduce the time to entry into a CO for a CLEC by several weeks. Covad's contract with U S WEST in Washington states that U S WEST will provide Covad with cageless collocation space in

45 days—far sooner than the 120 days that many ILECs commit to for cage-based collocation.

30. Cageless is also far less costly for both parties in terms of project management, use of engineering time and other resources. It avoids the need to EFI (engineer, furnish and install) duplicate infrastructures (HVAC, power, cabling). Cageless collocation is more space-efficient, thus saving space reclamation efforts (which ILEC and ILEC ratepayers would otherwise be required to pay for).

31. Therefore, as a policy matter, cageless literally allows more room for competition. In my experience, typical CO space is plentiful for cageless physical collocation. The space efficiency of cageless collocation relative to cage-based physical collocation can be best understood by way of an analogy. Finding space for a cageless bay of equipment in a central office is like finding space in a packed suitcase for a pair of socks. Finding space for a segregated collocation room in that same central office is like finding space in a packed suitcase for a starched tuxedo. As an individual who has worked for both an ILEC and a CLEC, it is very clear to me that cageless physical collocation is not only a technically feasible and practical way to implement physical collocation, it is by far the most-efficient and cost-effective form of physical collocation for all parties.

Virtual Collocation is not a Viable Option

32. In my opinion, virtual collocation does not give CLECs like Covad the ability to control costs and quality of service sufficiently. Under virtual collocation, the equipment of the CLEC's choosing will be installed in the central office, but the CLEC will not be permitted to have its employees operate, maintain and repair that equipment. Instead, the CLEC must train and pay for ILEC employees to undertake those tasks. In doing so, the

CLEC may have to compromise its trade secrets to the ILEC, a significant direct competitor. The CLEC has no option to "fire" or even reprimand the ILEC if the ILEC's employees do not perform their job sufficiently. The ILEC has every incentive—particularly when faced with competing demands on its personnel—to favor its own retail customers over CLECs such as Covad. For a start-up company like Covad, who believes that its competitive advantage derives in part from superior service to the incumbent LEC, direct control over its equipment and service-affecting matters such as provisioning, maintenance and repair activities is absolutely necessary.

33. Even if the ILEC does not affirmatively discriminate against a CLEC in a virtual arrangement, the ILEC's control over the CLEC equipment still place an effective cap on the quality of the CLEC service. Simply put, CLECs will not be able to offer better service than the ILEC when forced to use virtual collocation—at best, CLECs would have service as good as the ILEC. In reality, because the CLEC would have to coordinate service on the equipment through the ILEC, it would inevitably face communications and logistical problems that (1) it would not encounter if it controlled its own service and (2) the ILEC will not encounter in providing service to its own retail customers. The end result is to hinder CLEC efforts to differentiate their service from the ILEC and will deprive consumers of the choice of different types of service.

34. In addition, tariffs for virtual collocation services often contain unreasonable terms that make these arrangements costly and unwieldy. For example, Pacific Bell's FCC virtual collocation tariff requires that CLECs pay Pacific Bell to train Pacific Bell's own employees. The number of employees who must be trained and how much it will cost to train them is left solely to Pacific Bell's discretion. The number of ILEC

employees to be trained is potentially enormous if Covad is required to accept virtual collocation in dozens of central offices. The FCC tariff also requires the CLEC to disclose all confidential information about the type, quantity and inner workings of the equipment the CLEC plans to deploy. However, once a CLEC has paid to educate Pacific Bell's employees about the CLEC's highly sensitive business plans, nothing in the tariff prevents Pacific Bell from utilizing that information to its own advantage, or even from deploying those trained employees elsewhere, including to Pacific's own DSL operations.

35. In my experience, most CLECs regard virtual collocation as a less-preferable and oftentimes commercially nonviable solution. During my entire time of working in Pacific Bell's Industry Marketing Department (the department responsible for collocation), not a single CLEC ever ordered, much less implemented, virtual collocation in even a single CO. In fact, while I worked for Pacific Bell, the company was opposed to virtual collocation, and refused to provide virtual collocation unless it could not provide physical collocation. Interestingly, Pacific Bell has since completely changed its position.

36. Because virtual collocation requires the CLEC to cede control of its equipment and quality of service to the ILEC, virtual collocation sacrifices the CLEC's legitimate service and other interests seemingly only to alleviate ILEC discomfort with cageless physical collocation. With cageless physical collocation, each party manages its own equipment and is individually responsible for protecting its own equipment and intellectual property. Virtual collocation is a one-sided coercion of CLECs to accommodate ILEC ostensible security concerns about permitting CLEC employees into

its COs for the purpose of going about their own business—maintaining, operating and ugrading the CLEC's own equipment.

Controlled Environment Vaults ("CEVs")

37. Another possible alternative method of rapid collocation access would be to permitting CLECs to use CEVs in COs where there are genuine space limitations, even for cageless physical collocation. A CEV refers to a self-contained remote, portable space (often a trailer) that is specially configured to be equivalent to CO-grade space. CLECs could then station CEVs immediately outside the ILEC's CO (or, in some instances, on the roof of the building) and connect to the ILEC's facility and power supply. Using this approach, Covad could be up and running in less than 30 days. The CLEC would pay for its CEVs and need not have any physical access to the CO, alleviating any security concerns. And the lines connecting the CLEC equipment in the CEV to the CO would be very short, so DSL service speeds would not be degraded. I know that Pacific Bell *already* uses similar CEVs at a number of its COs for its own purposes. In addition, ILECs cannot seriously contend that it is more important (or better for consumers) to preserve parking spaces at COs than to allow more CLECs to compete. CLEC requests for CEV collocation should be handled in the same manner as the law requires—with an examination of the technical feasibility of this arrangement and provision on a first-come, first-served basis.

___[submitted electronically]_____

Thomas J. Regan
Dated: September 25, 1998

Attachment 2

Affidavit of John Fogarty
Covad Communications Company

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Deployment of Wireline Services Offering	)	CC Docket No. 98-147
Advanced Telecommunications Capability	)	
	)	

AFFIDAVIT OF JOHN FOGARTY
ON BEHALF OF COVAD COMMUNICATIONS COMPANY

1. My name is John Fogarty, Collocation Program Manager in the New York region for Covad Communications Company. My business address is 2330 Central Expressway, Santa Clara, CA 95050. My telephone number is (516) 679-0894.
2. Prior to coming to Covad, I was employed by Bell Atlantic – New York ("BA-NY" or "BA") for 25 years. While at BA-NY, I performed a myriad of different jobs. However, most recently, before moving on to work for Covad, I was contracted by BA-NY as project manager/technical specialist for collocation cages. My last position at BA-NY was Senior Engineering Specialist wherein I was responsible for the design and implementation of BA-NY's collocation program.
3. Since June, 1998, I have worked for Covad in the position of Collocation Program Manager for the New York region. I am responsible for all of Covad's collocation arrangements in New York and report to the Director of Collocation. Specifically, I manage the cage installation and turnovers by BA-NY. I also manage the Covad equipment installation and am also responsible for the initial circuit turn-up.

SUMMARY OF TESTIMONY

4. Covad's collocation experience in New York reveals both BA's culture of inefficiency and its sheer inability to handle the task. More specifically, I think that BA is not organizationally or structurally geared toward efficient collocation provisioning. There are simply too many moving parts that aren't effectively coordinated and managed that need to come together to get to the collocation end product. I also believe that BA has not allocated adequate resources to handle the volumes of collocation requests it is receiving now. And I don't believe that BA is able to meet reasonably foreseeable demand for collocations.
5. I am also concerned about the lack of consistency in collocation practice and procedure in the BA region. The BA collocation process varies by jurisdiction. This makes it all the more difficult for new entrants like Covad to do business in the BA states.
6. If BA gets into the long distance market too early, before its collocation processes and procedures are stream-lined and improved to address competitive needs and demands, not only will the situation get worse as collocation demand increases, but BA will have no incentive to fix the problem.

LACK OF CONSISTENCY IN PRACTICE

7. I am concerned about the fact that BA does not have a regional collocation process. To some degree, the lack of consistency relates to the Bell Atlantic/Nynex merger. Basically, two companies had varying practices with regard to collocation and there has been some effort – though far from completion – to merge these different

practices. However, to a large degree, there still remains two different practices – one that governs the north and the other that governs the south.

8. For example, there are different rates, charges, and intervals for virtual and physical collocation. For the North, the intervals for physical and virtual are 76 business days and 105 business days respectively. For the South, the intervals for physical and virtual are 180 days and 60 days respectively.
9. The BA CLEC Handbook holds other examples of inconsistent policy and procedure. For example, there are different requirements for cable installation regarding cable lengths, cable location and cable splicing. There are different methods for recovery of collocation construction costs. There are different provisions for power to the collocation node. There are different provisions and requirements for the Point of Termination ("POT") Bay.
10. Some collocation options are not available throughout the BA region. For example, BA offers shared cages in New York and Massachusetts only. There are two options for installation and engineering of CLEC-provided equipment except in New England states where equipment installation is done by Bell Atlantic employees. There are even different installation charges for the North and the South if Bell Atlantic does installation. There are different equipment inventory processes depending on whether a CLEC is virtually collocating in the North or the South.
11. I do not believe that there is any movement afoot to make these practices uniform for the entire region. Differing practices are particularly problematic for a company like Covad because the nature of our business requires collocations in every state to accommodate the many telecommuters that need service that crosses state lines.

BELL ATLANTIC'S COLLOCATION PROCESS

12. I would like to explain Bell Atlantic's collocation processes and procedures. Collocation applications for the entire 14-state BA region are received primarily by one individual – the Collocation Project Manager – located at BA's Pearl Street facility in New York City. This individual's responsibility is to review applications for completeness, "eyeball" requests for known space constrained central offices, and then to hand off collocation applications to staff in the regions.

13. BA's collocation process is doomed from the start, at the moment when applications are received at Pearl Street, because of a logjam caused by a mailroom practice. The Pearl Street mailroom will not immediately deliver collocation applications to the Collocation Project Manager. Instead, the mailroom makes a call to the Collocation Manager who has to send someone to the lobby to pick up the applications. For this reason, applications may sit in the mailroom or common delivery site for days before the Collocation Manager or his staff picks them up. More troubling is that it may be a week or more until the regional collocation staff, who actually do collocation provisioning, receive applications. Given that the most time-consuming part of collocation provisioning relates to engineering, cage construction, and space preparation, BA's mailroom process delays timely provisioning even before the real work begins.

14. As I mentioned earlier, there is only one person who has the responsibility for taking the initial shot at reviewing all of the collocation applications in BA's 14-state region. Clearly, BA is failing to adequately staff even this front-end process for potential collocators.

15. Applications are logged into a system that tracks collocation requests. In fact, when I was at BA, I instituted this log-in procedure for applications which, before that, had not been tracked on an individual basis. The Collocation Project Manager reviews the applications for completeness. He may also reject an application if there is a known lack of space in a particular central office. This space "analysis" is usually done based on the Manager's memory or through a quick phone call to someone who has knowledge of a particular central office. As far as I know, there isn't a formal list off of which he works. The Manager then sends the applications out for processing by the regions.

16. The next step in the process highlights another point of failure in the BA collocation process. The actual collocation work – engineering and construction -- involves a multitude of groups within BA that work independently toward a caged collocation end product. There is little to no coordination of all of the effort that is required to do collocation. Also, there is absolutely no way to obtain, at any given point in time, the status of a particular collocation request, unless a date is missed. When this happens, there is a scramble to identify the hold-up.

17. For New York, applications are sent to the Engineer Manager for Common Systems located at BA's facilities at West 36th Street, New York City. The Engineer Manager's staff (consisting of approximately 7 to 8 people) takes a more in-depth look at the requests which may include a field visit, if necessary. However, the Common Systems group does not have knowledge of all of the planned use for each central office in New York. Therefore, the Engineer Manager must engage in considerable coordination with other departments who are using or want to use

central office space. There is no organized method for understanding the internal space demands so this part of the process can take anywhere from weeks to months to conclude.

18. Once this coordination has concluded, BA confirms with the requesting collocator that it wants to go ahead with collocation. BA then processes an estimate of cost, gets necessary funding from the construction budget to finance the collocation arrangement, and obtains internal authorization to make the necessary expenditures to build the collocation arrangement. Obtaining a cost estimate approval can take up to five weeks.
19. BA's Common Systems group then requests the Real Estate Organization to issue work orders to purchase the cage, prepare floor space, and install air-conditioning, among other things. Simultaneously, an order is issued in the Vendor Engineering Center and Field Engineering to install the BA network that will support collocation, i.e. installing the POT bay, service access cables, and DC power. The Vendor Engineering Center purchases the necessary equipment and provides detailed engineering services. The field engineers establish a final implementation schedule. This could take another five weeks.
20. At last, BA informs the CLEC that a cage is ready. The interval in BA-North is 76 business days and the process I've talked about may bring the timeline well beyond the interval. This is why BA usually tries to talk the CLEC into delaying or staggering the cage deliveries because it simply does not have the wherewithal to meet the interval.

21. Further, it isn't surprising that BA refuses to allow CLEC to chart the progress of their collocation arrangement. I don't think even BA knows the status of collocations because there is no overall management of its collocation process.

22. Also, BA-NY treats the turnover to Covad as a type of "first inspection" of the collocation cage to determine its worthiness to support telecommunications service. Not one of the 28 cages that Covad has received to date met our requirements. I'll explain these problems later.

COVAD'S COLLOCATION EXPERIENCE

23. To date, Covad's collocation experience in New York has been extremely frustrating. Today Covad has 28 cages in New York. None of these cages was ready to support Covad's service on the turn-over date. Not one of these 28 cages has been brought into compliance with Covad's requirements. It has been extremely time-consuming to identify and correct these many deficiencies on a cage-by-cage basis, the result being a significant delay in actual turn-over of these cages. BA's field engineers were not aware of Covad's requirements nor did they know BA's own collocation requirements. Attached to my affidavit as Attachment A is a list of the deficiencies found in some of our cages. I'll note that Covad has made a total of over 73 applications for physical collocation, including the 28 cages we now have.

24. As I mentioned, not one of our 28 cages was delivered per Covad's requirements. When cage inspection occurs, Covad uses a form called "Covad Collocation Cage Acceptance Checklist" to determine whether a collocation has been properly constructed. The checklist identifies requirements regarding the cage, common area, power (AC, DC), lighting, POT bay, cabling, and other issues. In the case of Covad's

28 cages, the following list identifies some but not all of the problems which were encountered:

- Cage: cage door had to be moved to gain access to the cage, wrong-sized cage, upgrade of cage needed, wrong ironwork, wrong placement of cage, top of cage caved in
- Common area: no stumble lighting, no lock on common area door, no common area key, building lighting switch not available, no access card
- Air conditioning not installed
- Cabling: no cabling in POT bay, wrong cabling in cage, cable hole flange placed upside down, cables not supported, cables not butted, cable not long enough to reach fuse on Covad panel
- Power: no outlets or insufficient number of outlets, breakers and outlets not labeled/stenciled, wrong size essential feeds
- POT Bay: installed in reverse, insufficient or incorrect racking
- Grounding: ground bar out of limits, ground bar not bonded to cage
- Lighting: no emergency lighting, no access to light switch in common area and access hallway
- Other issues: new floor required due to asbestos removal, no environmental alarms, garbage in halls, excessive dust and debris left in space due to construction, water pipes by cage, window by radiator not sealed

25. Again, BA has yet to remedy many of the problems with our collocation cages. As far as we're concerned, BA has yet to turnover the vast majority of Covad's 28 cages for which we placed orders on May 1, 1998.

26. Up until the present, there has not been any process in place to ensure that a cage complies with the specific requirements of a CLEC. There has been no quality inspection. We've just recently been informed that BA will do a quality inspection on the cages, no doubt in response to Covad's complaints on its 28 cages.

When I was at BA, it was my job to troubleshoot on collocation problems on space issues, equipment deployment, or anything else that came up. I did some quality work and came up with space workarounds where supposedly no space existed. Basically, I was the last resort for problem collocation applications. It's my understanding that my position wasn't replaced. I don't understand why there aren't any resources dedicated to this important function. The quality of Covad's cages received to date certainly demonstrates the need for additional resources.

AVAILABILITY OF SPACE

27. I have concerns about space availability in BA central offices. Our first couple rounds of collocation applications revealed that there are space limitations in New York that affect Covad's ability to get into key central offices that serve many potential customers. There are 5 no space offices of the 63 initial applications. I have yet to know whether there will be space limitations in the remaining applications we have made. BA hasn't yet responded to these.

28. My knowledge of the central offices in New York makes me very concerned about BA-NY's ability to accommodate the remainder of Covad's applications. I seriously question whether BA is capable of assuring that it is efficiently using central office space. And I do not believe that there is a system in place to track current use of space and to fairly allocate available space between BA and CLEC use.

I believe that the space problem is caused in large part because there is fierce competition within BA for space in the central offices. Various groups within BA fight to retain and obtain space for their future use. I think it's fair to say that CLEC space is relegated to whatever space hasn't been earmarked for internal use. Prioritization is really just between CLECs and CLECs don't have a voice in this fight for space. BA's policy does not permit CLEC walk-throughs in central offices that supposedly do not have space for collocation. Inspections might be allowed on an individual basis. In New York, Covad hasn't been allowed to inspect a premise that is no space. The end result is that CLECs are being shut out of central offices.

OTHER ISSUES

29. We have also received very high costs for conditioning space in certain central offices. We are still waiting for cost details from BA.

30. Covad has not been receiving timely price quotes. For our second and third batches of applications, BA has been delinquent in getting Covad price quotes. This affects 42 of our applications.

31. Furthermore, for applications made in early July, there are turnover dates that go well beyond the interval. BA can do no better than provision some of these requests by mid February of next year, over seven months after we applied for these spaces. In most cases, we don't even have turnover dates.

CONCLUSION

32. In conclusion, BA needs to comprehensively revamp its collocation processes and procedures and adequately resource and train the staff that handle and do collocations.

[submitted electronically]

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John Fogarty
Collocation Program Manager
Covad Communications Company
September 24, 1998

COVAD'S NY CAGE PROBLEMS
(NOT ALL INCLUSIVE)
ATTACHMENT A

Cage A:
One duplex outlet not provided
Fuse locations not stenciled
Cable holes installed flange up (upside down)
Door key not provided
No Covad sign
Cage box not stenciled
Common door wall to be moved
2 110v 20a essential feeds not provided
Cable not long enough to reach fuse Covad panel
Fuse numbers not stenciled
POT bay cable rack to be redesigned
HICAP bay cable counts not stenciled
ABAM not grounded in bay
Too much slack loop cabling
Cabling not streaked
Fuse numbers not stenciled
Window by radiator not sealed
Wide open cable holes over common area
Add power rack to cable hole
Add switchboard rack to cable hole

Cage B:
Building lighting switch not available
2 110v 20a essential feeds not provided
One duplex outlet not provided
20A breakers not tagged Covad
CILLI not stenciled
No Covad sign
Fuses not stenciled
Cable counts and numbers not stenciled
DS3 panel moved up
Dusty – construction
Garbage in hall
Remove temporary AC construction lights
AC controls and alarms
Rework ground bar

Cage C:
Cage door lock needs new cylinder
No Covad sign

No stenciling on essential feeds
Run power leads

Cage D:
Power bay provided but no cabling into cage
Cage upgrade needed
No cage lock or key
One duplex outlets not provided
Outlet needs to be moved
Ground cable improperly crimped
POT bay needs to be reground in direction of flow
No emergency lighting

Cage E:
One duplex outlet not provided
Cable holes installed flange up (upside down)
CILLI not stenciled in POT bay
No air-conditioning
Cage door had to be moved because POT bay in front of cage door
HICAPs put in backwards

Cage F:
POT bay moved because blocking cage door
One duplex outlet not provided
20A breakers not tagged Covad
Fuse locations not stenciled on outlet
Cable holes placed flange up (upside down)
No Covad sign
Cabling into SVGALS in wrong opening
New racking needed for POT bay line-up and Covad
Close cable holes over cage

Cage G:
Duplex outlets not stenciled with breaker number
One duplex outlet not provided
CILLI not stenciled
Cable holes placed flange up (upside down)
Cage door key not provided
Additional fuses needed
No ABAM shield ground
Cable number not stenciled in SVGALS bay

Cage H:
2110v 20a essential feeds not provided
One duplex outlet not provided
PDSC to be moved to outside of cage

SVGALS rack to be dropped
Add waterfall rack to cable holes switchboard
Power and switchboard on combined rack

Cage I:
One duplex outlet not provided
20A breakers not tagged Covad
Cage top caved in
Cable holes placed flange up (upside down)
No Covad sign
Reroute and add VG cable rack

Cage J:
No emergency lighting
One duplex outlet not provided
PDSC inside cage and not stenciled
CILLI not stenciled
No Covad sign
POT bay racking needs to be redone
Cable counts and numbers not stenciled
No POT bay shield ground

Cage K:
No key to common area entrance
No emergency lighting
One duplex outlet not provided
20A breakers not tagged Covad
2 110v 20a essential feeds not provided
Cable holes not installed flange up (upside down)
No Covad sign
HICAP bay cable counts not stenciled
SVGALS bay cable numbers and counts not stenciled
Remove radiator
Need protection on water pipes
Area needs to be cleaned up
Ironwork wrong

Cage L:
AC power in transition
One duplex outlet not provided
Lighting pickup to be moved
Location of cable holes wrong
No Covad sign
No single point of ground
No stenciling on cable numbers and counts

Cage M:
One duplex outlet not provided
PDSC not in common area and AC shut off not mounted on outside of cage
Cable not long enough to reach fuse Covad panel
Ground bar not within 100 feet of ground
Cable hole to be sealed

Cage N:
No lock on common area door
2 110v 20a essential feeds not provided
One duplex outlet not provided
Cable not long enough to reach fuse panel
No Covad sign
No cable holes cut
PDSC breakers not tagged Covad
No separate ABAM ground
No emergency access

Cage O:
One duplex outlet not provided
Additional racking for POT bay
No fiber rack
No key in common area lock
No cable stenciling
Cables not butted or supported
Ground bar not within 100 feet of Ground

Cage P:
No cylinder in door lock
No Covad sign
Cut cable rack back out
2 BDFB fuses on a common BUS panel
Cable numbers and counts not stenciled
No single point of ground
No keys to cage

Cage Q:
CILLI not stenciled
No Covad sign
Relocate DS3 to top of Bay
DS1 needs to be wired
Racking incorrect
No air-conditioning
New floor asbestos removal
Relocate ground tap on SVGALS
Close cable hold over cage

Cage R:
No lock on entrance door
One duplex outlet not provided
Add racking to cable holes
Water fall cabling inside cage
Reground POT bay
Asbestos removal-floor replacement

Cage S:
One duplex outlet not provided
20A breakers not tagged Covad
Fuse locations not stenciled on shutoff
No Covad sign
PDSC AC shut off not mounted on outside of cage
Cable needs to be rebutted
Water pipes by cage
Move cage walls
Cable holes need to be cut

Cage T:
Building light switch not available
Emergency lighting
One duplex outlet not provided
20A breakers not tagged Covad
Fuse locations not stenciled
Cable holes not installed flange up (upside down)
HICAP bay cable counts not stenciled

Cage U:
2 110v 20a essential feeds not provided
One duplex outlet not provided
20A breakers not tagged Covad
Fuse locations not stenciled
No Covad sign
Cable holes not cut
Add racking
Cable counts not stenciled
Windows not sealed
AC not on
AC controls and alarms
No asbestos in floor

Cage V:
One duplex outlet not provided
20A breakers not tagged Covad

Cable holes sag
Cable not long enough to reach fuse Covad panel
Cable counts not stenciled
Cable holes not closed properly

Cage W:
Remove AC shut off
One duplex outlet not provided
1 box to pick up lighting feed not provided
CILLI not stenciled
No Covad sign
Cable not long enough to reach fuse Covad panel
Cable counts not stenciled
Shield needs reground

Cage X:
One duplex outlet not provided
No access to light switch in common area
Move rack to CA hole
HICAP in backwards
Remove DS3 cable
Move ground wire in SVGALS bay
Remove bars in SVGALS bay
Remove choke on bond

Attachment 3

Defining "Digital Loops"—
Avoiding Re-monopolization in a Digital World

Covad Communications Company
June 4, 1998
Working Paper Series, No. 1

Defining “Digital” Loops – Avoiding Re-monopolization in a Digital World

Defining "Digital" Loops – Avoiding Re-monopolization in a Digital World

Overview

The FCC has required incumbent LECs to unbundled loops certified to carry digital signals, as well as analog signals, as ordered by the CLEC customer.[1] This decision by the FCC recognizes that the purpose of the Telecommunications Act of 1996 was not simply to promote competition for analog voice services but to unleash competitive and innovative forces in the industry that can bring entirely new and advanced telecommunications services to the American consumer. Unfortunately, implementation of the FCC's digital loop unbundling requirements remains to this date -- more than two years after passage of the 1996 Act -- woefully inadequate. The failure to fully implement Section 251(c)(3) with regard to digital loops is causing unnecessary delay in the availability of advanced, high bandwidth services to residential neighborhoods across the country.

Three shortcomings are clearly impeding the development of competition in the provision of high bandwidth digital services.

First, precise definitions of the ILEC's obligation to provide unbundled digital loops are not present. ILECs, such as Bell Atlantic, simply have not provided loops certified to support digital signals. Bell Atlantic seems to believe that "compliance" with FCC rules consists of allowing CLECs to order analog or ISDN loops and *hope* that xDSL technology works over them. SBC -- at least as regards Texans -- will not provide loops to CLECs that can be counted on to provide high bandwidth services.[2]

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[1] *See Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, First Report and Order, 11 FCC Rcd 15499, at ¶ 380 (1996) ("*First Local Competition Order*") (definition of an unbundled loop "includes . . . two-wire and four-wire loops that are conditioned to transmit the digital signals needed to provide services such as ISDN, ADSL, HDSL and DS1-level signals"), *aff'd in part and vacated in part sub nom. Competitive Telecommunications Ass'n v. FCC*, 117 F.3d 1068 (8th Cir. 1997), *aff'd in part and vacated in part sub nom. Iowa Utils. Bd. v. FCC*, 120 F.3d 753 (8th Cir. 1997), *cert. granted*, 66 U.S.L.W. 3484 (U.S. Jan. 26, 1998).

[2] *See Petition of the Association for Local Telecommunications Services (ALTS) for a Declaratory Ruling Establishing Conditions Necessary to Promote Deployment of Advanced Telecommunications Capability Under Section 706 of the Telecommunications Act of 1996,* CC Docket No. 98-78, May 27, 1998, pages 12-17

Second, even where such loops are available, pricing of "digitally conditioned loops", varies so widely as to impede competitive entry. Although ILECs reported to the FCC prior to the enactment of the 1996 Telecommunications Act that the costs of maintaining analog and digital loops were approximately the same,[3] the recurring monthly prices for unbundled digital loops is often 20% higher than the price of analog loops. The lack of refined definitions for digital loops has left states attempting to implement Section 252(d) in a regulatory netherworld—without clear and concise descriptions of the ILEC's obligation to unbundle "digitally conditioned" loops, it is not surprising that prices vary widely among the states.[4]

Third, ILEC network modifications are increasing the extent to which copper loops terminate at remote terminals some distance away from the central office in Digital Loop Carrier ("DLC") systems. As digitalization is extended further towards residences, in no small part because of ILEC promises of xDSL offerings, the number of DLC-based loops will increase. DLC implementation inherently involves interface circuits (either analog or digital) that must be placed in a remote terminal between the residence and its serving central office. Since the xDSL "modem" at the residence must electronically match the digital interface at the remote terminal, if ILECs seek to limit equipment that can be placed at the remote terminal, those ILECs will be impeding the consumers right to select their own broadband CPE and the ability of CLECs to provide consumers with their choice of broadband CPE.[5]

Significant opportunities for ILECs to discriminate in favor of their own (delayed) digital service offerings will be created absent solutions to the problems that

[3] *See Access Charge Reform*, First Report and Order, 12 FCC Rcd 15982, 16028-32 (1997) ("*Access Charge Order*") (comparing costs of standard analog loops and loops which have been conditioned for Basic Rate Integrated Service Digital Network ("ISDN") service). Indeed, NYNEX submitted data showing that loops certified for digital traffic actually cost *less* than analog-certified loops because they can be tested and maintained remotely. *See id.* at 16197-99.

[4] For instance, in New York, Bell Atlantic justifies the cost difference between a "Premium Link" and an "Analog Link" on account that the "forward-looking" cost for a Premium Link differs than the "forward-looking" cost of an Analog Link because the forward-looking Premium Link contains fiber feeder and ISDN electronics deployed at a remote terminal. *See* Phase I Order, NYPSC Case Nos. 95-C-0657, 94-C-0095, 91-C-1174, April 1997. In contrast, the price for an ADSL-compatible loop from Ameritech in Illinois is *precisely* the same as an analog loop, a policy which rejects the notion that there is something "special" about the forward-looking cost of constructing digital loops which make such loops more expensive than the forward-looking cost of constructing analog loops. AT&T Communications of Illinois, Inc. Petition for Arbitration of Interconnection Rates, Terms and Conditions and Related Arrangements with Illinois Bell Telephone Company d/b/a Ameritech Illinois, Docket No. 96-AB-003 (Ill. Comm. Comm'n, Aug. 1, 1996).

[5] In fact, service introduction is already deleteriously affected. Pacific Bell's insistence that CLECs provide xDSL services through its remote terminals designed only for the provision of ISDN limits end users to only ISDN speeds – less than a tenth of what would be nominally available using existing technology.

surround the unbundling of digital loops. ILECs will be able to impede the ability of CLECs to provide the best broadband services to residential customers as soon as commercially and technically possible.

Policy Objectives

It is now axiomatic that a significant transformation is underway. This transformation is marked not only by increased speeds delivering information to an end user, but also by a fundamental change in the form -- digital versus analog -- of use of the network and to a lesser (but competitively critical) extent in the constituent components of the network itself. From the perspective of a residential or small business user, the new all-digital, packet-based network is evolving from the old analog circuit-switched network. While bits and pieces of hardware are being added and substituted, the hundreds of millions of dollars worth of much depreciated (and -- by the ILECs -- *much* deprecated) twisted copper wires remain in place.

The Telecommunications Act of 1996 and the subsequent implementing regulations require the incumbent local telephone company monopolies to make available to new competitive carriers the twisted copper pair associated with each residence and collocation space in irreplaceable central offices to install their own state-of-the-art telecommunications equipment. However, the monopoly providers remain in control of these physical assets and the information that is necessary to their intelligent and cost-effective use. While statute and regulation require incumbent providers to supply facilities to new entrants, the increasing importance of packet-based technologies inevitably has led to competitive tension as established monopolies provide new entrants wholesale access to facilities while attempting to cement their existing monopolies by deploying their own chosen versions of the same telecommunications equipment.

The challenge for those who believe that a competitive environment will deliver the best service offerings at the lowest prices is to act continuously to ensure that one-time monopolies will not successfully manipulate their control over unique physical facilities to retard and thwart the rapid growth of start-up competitors.

Digital entrants remain critically concerned with the regulatory and commercial provisioning of “local loops” – the aggregate facilities between a residence and its serving central office (or, perhaps, an intervening remote terminal). These loops cannot be viewed in isolation. Even if loops were ideally conditioned for digital service, inexpensive, and immediately available upon request, they would be of little use to a digital CLEC if that company were denied sufficient access to fully utilize the capability of the loops where they terminate. Similarly, such a digital CLEC might find its viability compromised if it were unable to interconnect data

telecommunications facilities so as to accept and deliver traffic upstream (via dedicated transport facilities, for example) consistent with the best technical and commercial practices applicable to its chosen and evolving network architecture. While anti-competitive strategies might seemingly affect only those facilities upstream from the local loop, the consequences of those actions will likely impact the practical implementation of high-speed, broadband access over the basic twisted copper pair of wires leading from the country's residential neighborhoods.

It is with these interrelationships in mind that this paper identifies the following public policy objectives to guide policy makers in their efforts to define adequately local loops certified to support digital transmissions (a "digital loop"):

- The facilities and interfaces comprising the digital loop should fully enable the continued development of competition in the provisioning of digital services to end users.
- Technological innovation in providing services over digital loops should be encouraged. New competitors should not be stymied by ILEC legacy equipment or operational methodologies. ILEC equipment decisions must not restrict the services competitors can provide over unbundled digital loops and must not restrict consumer choice of xDSL services.
- The potential anti-competitive effects of standards development must be taken into account. Interoperability should characterize any necessary standard. There must be strict parity afforded by ILECs to CLECs in the pre-ordering, ordering, installation, testing, maintenance and upgrading of all forms of loops, especially for digital loops.

Network Typology

A loop, historically, is the transmission facility from a customer premise to the central office. A loop "is typically a pair of copper wires." [6] The overwhelming majority of loops, approximately 75%, are less than 18,000 feet in length, are simple, unaugmented ("nonloaded") twisted pairs of AWG 19, 22, 24, and/or 26 copper wire, and can carry analog transmissions as well as digital signals. Other loops have different characteristics, depending on whether they must be conditioned to carry analog or digital signals. For example, long copper loops, greater than 18,000 feet, often require the placement of periodically spaced inductors, called load coils, to compensate for the attenuation of voice transmission on longer facilities. Approximately 25% of all loops are not an end-to-end pair of copper wires because they are served by digital loop carrier ("DLC") systems, or have load coils placed on them or have excess bridged taps.

[6] Testimony of William C. Deere for Pacific Bell, April 8, 1998, before the California Public Utilities Commission in R.93-04-003 and I.93-04-002 at 5, line 17.

The percentage non-end-to-end copper pair loops is increasing. While load coils and excess bridged taps may be installed less frequently (since they impede the transmission of digital signals), the number of DLC systems is increasing as digitalization moves towards the periphery of the network. DLC systems facilitate the transmission of digital signals along the loops they serve; however, bandwidth and signal characteristics are limited by the functionality and equipment that forms part of the DLC.

The analog POTS (plain old telephone service) network began with direct, wired connections between telephones, evolving over time to switched networks with calls connected first by hand, then by mechanical switches, and finally by digital switches. Digitalization occurred from the center of the network out, driven initially by the ability of large digital switches to communicate with one another in the management of long distance traffic. However, such digitalization has been stalled, and the insertion of analog line cards into the line side of such digital switches as 5ESS and DMS 100 switches has become an almost permanent feature of today's legacy network. Conversion to digital technologies in the traditional local loop (that infrastructure between a residence and its serving central office) has occurred extremely slowly to date, as evidenced by the ILECs inept ISDN "deployment" of the early 1990s.

The loop digitalization that has occurred appears to be driven by two related objectives. First, ILECs recognize the irreplaceable nature of central offices – not only are these offices the hubs of copper infrastructure laid over many years, their value as strategically located real estate has greatly increased as the country's consumption of telecommunications services has increased. As a consequence, ILECS will rationally seek to maximize the value of their central offices to themselves by increasing the areas and end users served by each central office where ever possible. Second, ILECS, sensitized to the importance and technical demands of digital delivery technologies through their exploration of Video Dial Tone and its xDSL component, have made incremental network upgrades that are consistent with preserving their own options for future digital service offering while simultaneously reducing the opportunities for CLECs to access "full run" copper loops in the central office. Both network drivers, expanding the area served by a central office and network modification to account for internal service offerings, stem from a common set of physical principles – the way electrical signals behave in copper wires.

Alexander Graham Bell and colleagues discovered in the 1880's that by twisting together the pair of copper wires carrying a telephone call, they could greatly reduce the electrical interference caused in and received from like twisted pairs bundled together in a single cable, commonly referred to as crosstalk. Unfortunately, there are other problems dictated by physical laws that appear more intractable. Usable signal strength over copper wire depends on a number of factors, including the length of the line, its wire gauge, crosstalk interference

(the sort reduced by twisting a copper pair), and in a digital environment, the presence of bridged taps and analog loading coils.

Line attenuation increases with line length and frequency, and decreases as wire diameter increases. Put another way, using standard 24 AWG gauge wire, analog voice telephone service provides adequate signal strength according to long-held telephone company practice, only out to a linear distance of about 18,000 feet from a central office without "something else". Until very recently, that "something else", by standard telephone company design practice, would have been the installation of loading coils along the loop. These are devices that compensate for signal loss in the voice frequency so that all copper loops would provide acceptable transmission quality beyond the otherwise practical maximum of 18,000 feet (or 18 kilofeet in telespeak). The modern day problem with loading coils is that they prevent the transmission of digital signals from the xDSL family of services. Loading coils were designed and installed to solve a particular problem – boosting the signal strength of plain old telephone service (POTS). Unfortunately, although they boost the analog signal that occurs only within the relatively narrow frequency band necessary for POTS, they effectively block the higher frequencies used by digital data signals characteristic of xDSL transmission technologies.[7]

Recognizing the impediment that analog loading coils are to the delivery of their own digital services, and for other additional reasons,[8] ILECs have used an alternative to reduce the effective length of copper wire in many (mainly suburban and rural) installations and in the case of certain new deployments. That alternative has been to extend fiber plant out from the central office into the local loop. The typical technique involves installation of fiber or cable in the feeder plant to a location that is remote from the central office that terminates at a "remote terminal". The "upstream" side of the remote terminal is connected to the central office by fiber or T1/E1 lines (now often using High data rate Digital Subscriber Line (HDSL) technology).[9] Each T1/E1 circuit, an integral part of

[7] In the United States, almost 75% of subscribers are within 18,000 linear feet of a central office. The remaining 25% or so have lines with analog loading coils which cannot be used for any xDSL service (including ISDN) without removing the analog loading coils necessary to support POTS or are served by digital loop carrier systems that can support ISDN and voice services but block xDSL transmissions.

[8] "Pair gain" is another motivation: an ILEC can use a limited number of T1/HDSL pairs that are available between the CO and an area to provide POTS service to a much larger number of narrowband loops. It is apparently cheaper for the ILEC to provide the DLC electronics than to lay additional cable, even when the total cable distance between CO and subscriber is within 18 kft.

[9] The T1 signal developed by Bell Labs in the early 1960s corrupts cable spectrum so much that no more than a single T1/E1circuit can be put into a single 50 pair cable, and none can be used in adjacent cables. HDSL is simply a better way of transmitting T1 or E1 over twisted pair copper lines and has now replaced the original T1 that used the Alternate Mark Inversion (AMI) protocol in many installations.

Digital Loop Carrier (DLC) system, concentrates 24 or 30 voice lines in digital form, known as pulse code modulation, on two copper pairs between the remote terminal and the central office, thereby reducing the copper analog distance between the final subscriber and the initial point of digitalization (the digital loop carrier remote terminal).

Remote terminals, in essence, collect analog and ISDN signals from individual subscriber lines and concentrate them into one or more multiplexed digital transmission facilities (copper T1/E1 lines or fiber optic lines) connected to the central office. As xDSL technologies are deployed, the line cards on the subscriber side of the remote terminal represent a potential bottleneck (as explained later): these line cards must be compatible with the customer premises equipment used to provide the particular "flavor" of xDSL deployed in a competitive environment.

Bridged taps are a consequence of an ILEC strategy to preserve options at the time a twisted copper pair was initially deployed from a central office. When the wire originally went on to poles or into the ground, there may have been several possibilities as to where it might ultimately terminate. In order to account for various configurations, the copper wire was installed with a number of spurs leading from it that could be tapped into depending on where the end user was ultimately located. Consequently, the wire leading from the selected terminating residence towards the central office has spurs or taps leading from it that have been terminated (or bridged). Those bridged taps represent deployment options that were not utilized.

The presence of bridged taps is of minor consequence in the delivery of analog POTS, as long as the combined length of all bridged taps is within design limits related to voice transmission quality. Services within the xDSL family, however, use frequencies much higher than those used by analog POTS.[10] Signals at other than analog POTS frequencies suffer significant reflection and attenuation impairments when they encounter a bridged tap that is of resonant length. (The higher the signal's frequency is, the shorter the tap that causes a reflection.) In addition, each tap adds to the total amount of stray capacitance across the pair, which tends to attenuate the higher frequencies. The more bridged taps that are present, and especially the presence of taps of resonant length, the more difficulty they cause to xDSL service. The resulting interference may preclude xDSL service over a twisted copper pair until the excess bridged taps are removed. Typically, xDSL signals can work acceptably in the presence of a small amount of bridged taps; just what amount can be tolerated varies among the different xDSL technologies. Because bridged taps are so common in ILEC outside plant, xDSL specifications typically state carefully exactly how many and how long bridged taps can be.

[10] POTS uses 0-3.4 kHz, while the upstream ADSL channel typically uses 30-138kHz and the ADSL downstream channel uses 138-1104kHz.

The foregoing discussion of network topology has two consequences for the definition of digital loops. A digital ready loop must be free of the loading coils that were installed to support analog service, and must also be free of excessive bridged taps.

In addition, public policy must recognize that ILECs have been changing the characteristics of their *entire* outside plant in order to accommodate digital technologies, such as deploying DLC remote terminals. When ILECs construct, maintain, repair and upgrade their "outside plant", those efforts are made for *all* loops and households in the neighborhood simultaneous. As a result, ILEC outside plant decisions are made with both "analog" and "digital" uses of that outside plant in mind. Therefore, although the actual engineering requirements of analog and digital loops may differ, from the perspective of pricing, installation, maintenance and repair, there really is no such thing as an "analog outside plant" and a separate "digital outside plant". Therefore, while altering loops currently engineered to support analog service to loops engineered to support digital services may involve some actual, non-recurring line work, a true "forward-looking" cost methodology would price both "analog" and "digital" loops at similar prices.

xDSL Implementation Options

The xDSL family of services contains a number of transmission technologies capable of delivering high speed data over copper wire. They vary as to the number of wires necessary, data rates, practical implementation distances from the serving central office, ability to tolerate bridged taps, and whether they provide symmetrical speed in the upstream and downstream directions.[11] Reference has already been made to HDSL and its likely primary use in the feeder plant, for example, to connect a remote terminal to the central office. SDSL (Single pair Digital Subscriber Line) is essentially a single pair version of HDSL that can be used to serve residences or businesses that require symmetric access (such as servers and remote LAN "power" users that require upload speeds as great as their download speeds). SDSL is generally limited to distances not greater than 9,000 feet on 26 gauge wire pairs (12,000 feet on 24 gauge wire) at 768 kbps. SDSL can also be operated at speeds lower and somewhat higher than 768 kbps. Since ADSL (Asymmetric Digital Subscriber Line) can achieve download speeds above 6Mbps (greater than typical SDSL symmetric speeds), individual user requirements determine the optimal technology.

[11] See, for example, the ADSL forum web site for a comparison of basic xDSL technologies, http://www.adsl.com/adsl_forum.htm.

ADSL[12] is the technology likely to be used over most digital local loops to residential neighborhoods. This has to do with the way ADSL technology interacts with the existing copper infrastructure. Alexander Graham Bell's invention of twisted pair wiring reduces, but does not eliminate, the signal crosstalk interference from one line to another caused by inductive and capacitive coupling. Signals over twisted pairs bundled in a telephone cable interfere with one another and this interference increases as the utilized frequencies increase. Unlike ADSL, SDSL uses identical frequency bands in both the upstream and downstream directions, and SDSL signals experience the dominant form of crosstalk in a cable at the transmission frequencies of interest, known as near-end crosstalk or NEXT. NEXT occurs when a strong transmitted signal at one end of a cable pair couples unwanted energy into a weak signal in a neighboring pair at the same end of the cable. If many twisted pairs within a cable are used to transmit SDSL, the data rate and line distance from the central office may be considerably reduced.

ADSL, when using Frequency Division Multiplexing, encounters fewer usage restrictions caused by signal interference in adjacent twisted pair wires and cables because the transmitted energy occupies a different frequency band than the received energy, eliminating self-near-end crosstalk as an impairment. ADSL supports significantly higher downstream speeds than does SDSL at greater distances from the central office. The fact that ADSL provides greater downstream speeds than upstream speeds (speeds vary depending on the modulation techniques described below) is usually not an inhibiting factor for users, although business users may prefer symmetric bandwidth.

ADSL can be implemented using one of several different modulation systems, and using one of several different customer premise equipment (CPE) form factors. The possible variations have competitive implications both at the remote terminal and inside the central office (collocation).

There are many different options for signal modulation to implement ADSL. The three most common are: Quadrature Amplitude Modulation (QAM), Carrierless Amplitude-Phase Modulation (CAP), and Discrete Multi-Tone Modulation (DMT). While the differences among these technologies are highly technical[13], some explanation is appropriate because the equipment used to implement them is incompatible at present.

QAM is the least used modulation technique for ADSL and has not attracted vendors for implementation in its unmodified form.

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[12] ADSL itself has become a family of services including splitterless ADSL, ADSL lite and so on. The differences among these variants are noted where they are important to the discussion.

[13] *See*, e.g. http://www.efficient.com/whitepaper.html

CAP, developed by AT&T Paradyne, is a version of QAM in which incoming data modulates a single carrier that is transmitted over the twisted copper pair. The carrier itself is suppressed before transmission (it contains no information) and is reconstructed at the receiver. At present, CAP offers advantages of less expensive all-digital transceiver implementation, lower power dissipation and relative simplicity of implementation and design.

DMT, developed by Amati Communications and Stanford University, and commercialized by Northern Telecom and others, collects incoming data and then distributes it over a large number of small individual carriers, each of which uses a form of QAM modulation passed through a fast-Fourier-transform process. DMT is the basis of ANSI Standard T1.413-1995.

CAP or DMT (or the more recent splitterless ADSL variants and future VDSL) can be implemented at the customer premises using different forms of equipment.[14] The three most common appear to be:

1. A device separate from the personal computer containing an Ethernet attachment to the computer;
2. A device separate from the personal computer containing an 25 Mbps (ATM25) attachment to it; or
3. An integrated network interface card (NIC) installed inside the personal computer supporting ATM service.

These devices and cards (of varying functions) are often referred to as xDSL "modems". This is misleading because they perform substantially different roles from the true analog modems that PC owners are familiar with (either as internal cards or external devices). An analog modem provides only signal modulation for a low speed bit stream. An ADSL "modem" provides a high speed interface such as Ethernet or ATM25 (asynchronous transfer mode), and performs functions such as packet or cell forwarding, data encapsulation and link performance monitoring.

The customer premises equipment is responsible both for encapsulation of data (Ethernet or ATM) and transmission of the resulting cell across the ADSL link in the local loop using either CAP, DMT, or a proprietary technology. The ADSL

[14] Although most ADSL installations envision this equipment being located *inside* the end user's residence or office, it is conceivable that an ILEC might seek to locate comparable equipment *outside* the residence and even on the network side of the Network Interface Device (NID). Such equipment would then, arguably, be part of the network and could be used to limit the equipment options available to CLECs offering a comparable service. (That is, an ILEC could argue that its network required use of CAP or DTM technology simply because of its equipment and placement decisions.) As a result, it is important that the definition of a "digital loop" *not* include equipment placed on the end of the loop on the network side of the NID, which would give the ILEC the ability to require CLECs to use a particular technology or vendor that the ILEC may happen to prefer.

link terminates either (1) into a remote terminal associated with a digital loop carrier (DLC) system, or, (2) in the event that the twisted copper pair (devoid of loading coils and with conforming bridged taps) runs to the central office, into a Digital Subscriber Line Access Multiplexer (DSLAM). Regardless of whether it terminates into a remote terminal or DSLAM, the actual interconnection device is a line card. That is, the twisted copper pair is physically connected to a line card that is then plugged into the remote terminal or DSLAM (if the termination is at the central office).

The terminating line card must match the customer premises equipment! CPE that supports CAP must be paired with a line card that supports CAP; DMT paired with DMT. Therefore, when a customer chooses a particular form of CPE (which is the customer's right under the CPE unbundling rules—*see* 47 C.F.R. § 64.702(e)), a corresponding line card must be installed, either in the central office (for non-DLC loops) or at the remote terminal (for DLC loops). As a result, the ILEC's obligation to provide CLECs with unbundled digital loops *must* provide for installation of line cards of the consumer's choosing at remote terminals.

Vendors presently offer equipment as various as the different combinations of variables suggest. Innovation is proceeding at a rapid pace as manufacturers seek to maximize data throughput, extend line length for any given data transfer speed, minimize the spectral interference caused and received by wires connected to their terminating equipment, increase equipment flexibility and adaptability, simplify installation procedures (or eliminate them altogether for CPE), and minimize size, design complexities and cost.

The following competitive concerns arise in light of the various ways in which ADSL implementation is possible now and in the foreseeable future, given that the ILECs maintain physical control over the loop network facilities. These concerns must be addressed by policy makers seeking to define the ILEC's obligation to provide unbundled digital loops.

First, standardization must not be used to cloak anti-competitive behavior. As previously mentioned, DMT is the basis of an ANSI standard. However, available equipment utilizing CAP technology is currently preferable for some network solutions. If the immediate past is a guide, technical standards will not promptly be available to support innovations that mitigate existing technical problems.

Second, ILEC equipment choices should not be allowed to foreclose the equipment or technology choices of CLECs. It is conceivable that an ILEC would seek to limit the CLEC interface with remote terminals; this could prevent the CLEC from using the best available technology to implement intended service offerings. ILEC control of remote terminals dictates the choice of equipment, service coverage, and technologies available to CLEC customers. The "privately beneficial without being publicly harmful" standard established in the *Hush-a-*

Phone Case should be utilized to permit CLECs the flexibility to deploy xDSL electronics of the customer's choosing at the customer's premises, remote terminals and central offices.

Policy makers also must recognize that an ILEC may be impurely motivated in its network design and construction, and may seek to limit deployment of particular "flavors" of xDSL that will cut into significant established ILEC revenue streams (e.g., T1, fractional T1, and frame relay services). ILECs should affirmatively cooperate with CLECs who choose to exercise their right to collocate DSL hardware that supports the choice of end-users, including DSLAMs and related digital line cards in remote terminals. Therefore, provision of a "digital loop" to a residence serviced by a DLC must include the ability of the CLEC to place at the remote terminal an xDSL line card that matches the particular xDSL modem supporting the service the *end-user customer* has chosen.

In addition, digital loops should be defined (and, by consequence, priced) without supporting hardware in order to preserve the CLEC's ability to pay separately for tailored DSL hardware. This methodology would, in large part, remove the artificial "digital loop premium" that currently exists within a number of states.

Third, spectral interference concerns should be addressed using reasonable adaptations of existing general principles of frequency use. A guiding US regulatory principle (accepted internationally in the Radio Regulations) is that while a new user should not cause harmful interference to an existing user, the existing user has some obligation to accommodate the new entrant. These issues should be resolved in the context of digital loop definition and operational guidelines. They *should not*, however, be used as a shield by ILECs to prevent CLEC deployment of DSL technologies while the ILEC "studies" the issue.

Fourth, CLECs should not be comparatively disadvantaged by ILECs regarding implementation of technical solutions or associated provisioning. For example, if the technical and economically feasible solution to a DLC issue is bypass by additional copper infrastructure, an ILEC should not be able to avail itself of that solution (in a particular time period) while denying or delaying the solution to a CLEC.

Fifth, while CLECs should not be comparatively disadvantaged, neither should they be denied solutions or implementation strategies simply because the ILEC does not currently utilize such approaches in its internal provisioning. Put another way, the principle of "no comparative disadvantage" establishes a performance floor, not a ceiling. This is particularly important in an environment when ILECs are striving to introduce ADSL in competition with CLECs and would naturally seek a first to market advantage. ILEC motivations to transform their circuit-switched analog network (into which significant sunk costs have been dropped) will always lag the motivations of innovative CLECs who want to utilize existing outside plant for new high-bandwidth services. Therefore, digital loop

definitions and solutions should not be limited solely to solutions that the ILEC may deploy for its own services—otherwise, potentially efficient solutions to outside plant issues will be left on the shelf possibly for years.

The Central Office and Beyond

While this paper focuses on problem areas associated with the definition of unbundled digital loops, central offices are potential bottleneck facilities. They uniquely act as termination points for the ubiquitous copper infrastructure in the areas they serve. ILEC conduct associated with central office management, if less than benign could severely impact the value and use of local loops. In short, a best effort in the definitional requirements associated with local loop provisioning would be for naught if practical implementation were prevented by restrictions occurring within or upstream from the central office.

The limitation on CLEC location of "switching equipment" in central offices[15] should constantly be evaluated in light of the size, function and technical alternatives available to a CLEC and in light of the public interest in fostering the rapid deployment of broadband services. Limiting CLEC collocation of switches was not unreasonable when the purpose behind collocation was to facilitate competition in non-switched special access services in the *Expanded Interconnection* proceeding. Now that the 1996 Act affirmatively contemplates competition for all telecommunications services, these limitations make little sense. CLECs should be permitted to collocate on an unfettered basis a rack-mountable box (perhaps a "router", perhaps a "switch") that may or may not perform a switching function, but, at any rate, may be wholly independent of the circuit switched network.

As previously mentioned, ADSL circuits carry within them the ability to carry POTS signals in digital form. ILEC central office management should not be allowed to interfere with one CLEC passing off POTS traffic derived from its ADSL service to another carrier.

Finally, interconnection of data networks pursuant to Section 251(a) is just as important for data services as it is for analog POTS. CLECs providing competing ADSL service offerings from the same central office may find it commercially advantageous to consolidate traffic destined for a single customer. (This is most easily demonstrated by multiple ADSL providers who connect a single Internet Service Provider to high-speed access customers.) CLECs should be able to aggregate traffic within the central office rather than terminating it into an ATM or frame relay "cloud" for aggregation and delivery by the ILEC. In addition, a CLEC's DSL customer (such as an ISP) may also wish to receive all of its in-bound DSL traffic on one trunk (perhaps a DS3 provided by the CLEC)—

[15] 47 C.F.R. § 51.323(c).

therefore, that CLEC should be able to interconnect with an ILEC's ATM or frame relay "cloud" to receive DSL traffic which originated on the ILEC's network that is destined for that CLEC's DSL customer.

Conclusion

Defining the local loop for the purpose of enabling and encouraging xDSL service offerings is, unfortunately, not a one-time technical and grammatical exercise. The technologies are commercially viable while continuing to evolve. The equipment necessary for implementation is developing rapidly. The American consumer's insatiable demand for increasing bandwidth means that these technologies will continue to develop and improve—in ten years, it is easily conceivable (perhaps likely) that 1.5 Mbps downstream bandwidth will appear as slow and plodding as a 28.8 kbps modem seems today. As a result, there will remain a constant interplay between evolution of the network and physical control of facilities by ILECs that requires continuous monitoring for anti-competitive conduct. If unchecked, such conduct, even if cloaked in seemingly innocuous guise, would constrain the offerings of high bandwidth services by competitors while reserving exclusive high bandwidth access to ILEC premium customers.

The introduction to this paper suggested several public policy considerations that should guide continuous oversight. In light of the intervening technical discussion, they bear repeating:

- The facilities and interfaces comprising the digital loop should fully enable the continued development of competition in the provisioning of digital services to end users.
- Technological innovation in providing services over digital loops should be encouraged. New competitors should not be stymied by ILEC legacy equipment or operational methodologies. ILEC equipment decisions must not restrict the services competitors can provide over unbundled digital loops and must not restrict consumer choice of xDSL services.
- The potential anti-competitive effects of standards development must be taken into account. Interoperability should characterize any necessary standard. There must be strict parity afforded by ILECs to CLECs in the pre-ordering, ordering, installation, testing, maintenance and upgrading of all forms of loops, especially for digital loops.

The Covad Working Paper Series is designed to discuss and address public policy, regulatory and economic issues as they relate to the development of the competitive market for advanced high-bandwidth digital services to American consumers.

Covad Communications Company, a Packet Competitive Local Exchange Carrier (PCLEC), is the first digital communications company focusing on corporations and Internet Service Providers that require greater bandwidth and better support to meet the needs of their internal and external customers. Covad's network is the largest operational and commercial xDSL deployment in the United States. Covad's senior management team includes a number of seasoned executives who have successfully invested in and delivered market-leading solutions in the telecommunications, computer and Internet markets.

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Attachment 4

Proposed Collocation and Unbundling Rules

COVAD'S PROPOSED COLLOCATION AND LOOP RULE REVISIONS

47 C.F.R. § 51.5 (Terms and Definitions) shall be amended by replacing the definitions of "Physical Collocation" and "Premises" as follows—

Physical Collocation. *Physical collocation* is required by Section 251(c)(6) of the Act. Multiple technically feasible forms of physical collocation shall be made available by incumbent LECs, as described in 51.323(a) of these Rules. All forms of physical collocation enable a requesting telecommunications carrier to:

(1) Place any equipment, including switching equipment, CPE and other equipment, used or useful for interconnection or access to unbundled network elements within or upon an incumbent LEC's premises;
(2) Use all the features, functions and capabilities of such equipment to interconnect with an incumbent LEC's network facilities for the transmission and routing of telephone exchange service, exchange access service, or both, or to gain access to an incumbent LEC's unbundled network elements for the provision of any telecommunications service;
(3) Enter those premises, subject to reasonable terms and conditions permitted by Section 51.323 of these Rules, to install, maintain, and repair equipment used or useful for interconnection or access to unbundled elements; and
(4) Obtain reasonable amounts of space (in single-bay increments) within or upon an incumbent LEC's premises, as provided in this part, for the equipment used or useful for interconnection or access to unbundled elements, allocated on a first-come, first-served basis.

Premises. *Premises* refers to an incumbent LEC's central offices and serving wire centers, as well as all buildings and structures owned or leased by an incumbent LEC to house its network facilities, and all structures that house incumbent LEC facilities on public rights-of-way, including but not limited to terminals and vaults containing loop concentrators, or similar structures, as well as all land or space owned or leased by an incumbent LEC around such central offices, serving wire centers, buildings and structures.

47 C.F.R. § 51.321 shall be amended by replacing subsections (b), (c), (d), (e), (f) and (h) as follows—

(b) Technically feasible methods of obtaining interconnection or access to unbundled network elements include, but are not limited to:

(1) Physical collocation and virtual collocation at the premises of an incumbent LEC (including all forms of physical collocation as defined by Section 51.323(a) of these Rules); and
(2) Meet point interconnection arrangements.

(c) A previously successful method of obtaining interconnection or access to unbundled network elements at a particular premises or point on the network of a telecommunications carrier (including any particular form of physical collocation as defined in Section 51.323(a)) is substantial evidence that such method is technically feasible in the case of substantially similar network premises or points on any incumbent LEC's network.

(d) An incumbent LEC that denies a request for a particular method of obtaining interconnection or access to unbundled network elements on the incumbent LEC's network (including any particular form of physical collocation as defined in Section 51.323(a)) shall notify the state commission of the dispute within five (5) days, and must prove to the state commission with clear and convincing evidence that the requested method of obtaining interconnection or access to unbundled network elements at the requested point is not technically feasible. In the event that the state commission does not enter a decision in this dispute within sixty (60) days of the incumbent LEC's denial, any party to the dispute may request the Commission to act pursuant to the procedures of Sections 51.801, *et seq*. of these Rules. A state commission's application of a different legal standard or burden of proof in resolving a dispute pursuant to this subsection shall constitute a failure of the state to carry out its responsibility under section 252 of the Act, and any party in that proceeding may immediately request the Commission to act pursuant to the procedures of Sections 51.801, *et seq.* of these Rules.

(e) An incumbent LEC shall be required to provide for any technically feasible form of physical collocation of equipment used or useful for interconnection or access to unbundled network elements within or upon a particular incumbent LEC premises until it demonstrates with clear and convincing evidence to the state commission (and the state commission finds that the incumbent LEC has met this burden within sixty (60) days of the incumbent LEC's demonstration) that the requested form of physical collocation within or upon that particular premises is not practical for technical reasons or because of space limitations. The incumbent LEC must make the

demonstration required by this subsection within thirty (30) days of rejecting any application for any form of physical collocation within or upon any premises of that incumbent LEC by any requesting telecommunications carrier. This demonstration must contain clear and convincing evidence that the incumbent LEC is in full compliance with the requirements of Section 51.323(f) (including Sections 51.323(f)(3), (4), (5), (8), (9), and (10)) of this part. The incumbent LEC shall serve this demonstration upon all requesting telecommunications carriers who have applied for any form of physical collocation at that particular incumbent LEC premises within twelve (12) months of the date of the demonstration and upon all entities that have already established any form of physical collocation at the particular incumbent LEC premises. In such cases where the state commission finds that the incumbent LEC's demonstration has met its burden within sixty (60) days of the filing required by this subsection, the incumbent LEC shall be required to provide virtual collocation, except at points where the incumbent LEC proves to the state commission that virtual collocation is not technically feasible by clear and convincing evidence. If virtual collocation is not technically feasible, the incumbent LEC shall provide other methods of interconnection and access to unbundled network elements to the extent technically feasible. In the event that the state commission does not act within sixty (60) days of receiving a incumbent LEC filing made pursuant to this subsection, any party in that proceeding may request the Commission to act pursuant to the procedures of Sections 51.801, *et seq*. of these Rules. A state commission's application of a different legal standard or burden of proof in a proceeding initiated pursuant to this subsection shall constitute a failure of the state to carry out its responsibility under section 252 of the Act, and any party in that proceeding may immediately request the Commission to act pursuant to the procedures of Sections 51.801, *et seq.* of these Rules.

(f) As part of the demonstration required by subsection (d) or (e) above, an incumbent LEC shall submit to the state commission detailed floor plans or diagrams of any premises where the incumbent LEC claims that physical collocation is not practical because of space limitations. Subject to an appropriate protective order requested by the incumbent LEC, the incumbent LEC shall provide a copy of these detailed floor plans or diagrams to all requesting telecommunications carriers served by the incumbent LEC's demonstration and to any interested party within five days of the interested party's request.

* * *

(h) Within five (5) business days of rejecting any application by a requesting telecommunications carrier for any form of physical collocation of equipment at the incumbent LEC's premises for technical reasons or because of space limitations, the incumbent LEC shall (subject to an appropriate protective

order) provide, upon request, the requesting carrier detailed floor plans or diagrams of the particular premises and permit the requesting telecommunications carrier to tour the particular premises during regular business hours.

Section 51.323 (Standards for Physical Collocation and Virtual Collocation) is amended by replacing current subsections (a), (b), (c), (f), (i) and (j) and inserting new subsections (k) and (l) as follows—

(a) An incumbent LEC shall provide physical collocation and virtual collocation to requesting telecommunications carriers.

(1) An incumbent LEC has the obligation to provide requesting telecommunications carriers with any technically feasible physical collocation arrangement, pursuant to the procedures of Section 51.321 of these Rules, including, but not limited to, cageless physical collocation, CEV hut collocation, and shared cage collocation.

(2) As used in this part, "cageless physical collocation" is a form of physical collocation in which a requesting telecommunications carrier has the ability to place its own equipment in single bay increments within or upon already-conditioned floor space an incumbent LEC's premises. The requesting telecommunications carrier may (i) use all the features, functions and capabilities of such equipment to interconnect with an incumbent LEC's network facilities for the transmission and routing of telephone exchange service, exchange access service, or both, or to gain access to an incumbent LEC's unbundled network elements for the provision of a telecommunications service; (ii) enter those premises, subject to reasonable and nondiscriminatory terms and conditions, to install, maintain, and repair such equipment; (iii) obtain single-bay increments of conditioned floor space within or upon the incumbent LEC's premises for equipment used or useful for interconnection or access to unbundled elements, allocated on a first-come, first-served basis, as required by this part; and (iv) reserve, on terms at least at parity with the incumbent LEC self-reservation policies, adjacent conditioned space for an additional three bays of equipment for up to three months.

(3) As used in this part, "CEV hut collocation" is a form of physical collocation in which a requesting telecommunications carrier has the ability to place its own equipment in a controlled environmental vault ("CEV" hut) within or upon an incumbent LEC's premises. The CEV hut may be designed or otherwise procured and installed by the requesting telecommunications carrier. An incumbent LEC shall provide power, cabling and other physical collocation services and facilities to requesting telecommunications carriers on nondiscriminatory terms. An incumbent LEC shall not require the requesting telecommunications carrier to trench or have trenched any cabling or conduit connecting the CEV hut to the incumbent LEC premises.

(4) Shared cage collocation is an arrangement in which a physical collocation node is shared by two or more requesting telecommunications carriers pursuant to terms and conditions agreed to by those carriers. Within ten (10) business days of being notified that two or more requesting

telecommunications carriers are sharing a physical collocation node, the incumbent LEC shall accept, provision and bill separately orders for telecommunications services and/or unbundled network elements from all of the requesting telecommunications carriers sharing that single physical collocation node.

(5) To the extent technically feasible, incumbent LECs shall, at a minimum, afford all requesting telecommunications carriers parity in rates, terms and conditions for all forms of physical collocation. As used in this section, "parity" means that all requesting telecommunications carriers shall be subjected to only the same rates, terms and conditions in physically collocating equipment within or upon incumbent LEC premises as incurred by the incumbent LEC when it locates and operates its own equipment within or upon its premises.

(b) An incumbent LEC shall permit the collocation of any type of equipment used or useful for interconnection or access to unbundled network elements in the provision of a telecommunications service. Except as expressly approved by the Commission upon application by an incumbent LEC, an incumbent LEC may not impose any safety standards upon any type of equipment that a requesting telecommunications carrier seeks to collocate, and an incumbent LEC may not impose more-restrictive safety standards upon collocated equipment than it applies to similar equipment that it has placed within or upon any of its premises for similar purposes. If an incumbent LEC objects to collocation of any particular piece of equipment, the incumbent LEC must immediately make available to the collocating telecommunications carrier a list of all equipment (including make and model number) that it has accepted for collocation and a list of all equipment (including make and model number) that the incumbent LEC uses within or upon its premises. In the event an incumbent LEC objects to collocation of equipment by a collocating telecommunications carrier for purposes within the scope of the Act, the incumbent LEC also must, within five (5) days, file with the Commission, and serve upon the collocating telecommunications carrier via overnight delivery service, clear and convincing proof supporting that position. The Commission shall act within sixty (60) days of the incumbent LEC's filing made pursuant to this subsection. The incumbent LEC shall have the burden of proof in all disputes brought pursuant to this subsection, and the incumbent LEC may not prohibit, or take steps that effectively prohibit, the collocating telecommunications carrier from using any piece of equipment until the incumbent LEC obtains a decision from the Commission supporting the incumbent LEC's position in any dispute identified pursuant to this subsection. Equipment used and useful for interconnection and access to unbundled network elements includes, but is not limited to, all features and functions of:

(1) Transmission equipment including, but not limited to, optical terminating equipment and multiplexers;

(2) Digital Subscriber Line Access Multiplexers ("DSLAMS");
(3) Remote access management equipment, including equipment used to access and monitor this equipment;
(4) Rack-mountable digital packet switches, cross-connect equipment, and routers; and
(5) Equipment being collocated to terminate basic transmission facilities pursuant to Sections 64.1401 and 64.1402 of this chapter as of August 1, 1996.

(c) Incumbent LECs shall not restrict collocating telecommunications carriers from utilizing any and all features and functions in rack-mountable, collocated equipment, including, but not limited to, any and all packet-switching or routing features and functions.

* * *

(f) An incumbent LEC shall allocate space for the collocation of the equipment identified in paragraph (b) of this section pursuant to the following requirements:

(1) An incumbent LEC shall, for physical collocation, make single-bay increments of space available within or upon its premises to requesting telecommunications carriers on a first-come, first-served basis, provided, however, that the incumbent LEC shall not be required to lease or construct additional space at central offices and wire centers to provide for physical collocation when existing space has been exhausted;
(2) An incumbent LEC shall, for virtual collocation, make space available within or upon its premises to requesting telecommunications carriers on a first-come, first-served basis;
(3) An incumbent LEC shall remove non-essential administrative offices, recreational space, and any obsolete or retired equipment within or upon its premises prior to denying a request for physical collocation on grounds of space limitations;
(4) To the extent technically feasible, an incumbent LEC shall make contiguous space available to requesting telecommunications carriers that seek to expand their existing collocation space;
(5) When planning renovations of existing facilities or constructing or leasing new facilities, an incumbent LEC shall take into account projected demand for collocation of equipment;
(6) If an incumbent LEC receives an application for physical collocation on an incumbent LEC premises and the incumbent LEC has sufficient amount of already-conditioned or prepared floor space anywhere within or

upon that premises that would accommodate that application, the incumbent LEC shall provide the requesting telecommunications carrier that space within 45 days and may only charge the requesting telecommunications the incremental power, cabling and floor space rental costs of establishing the collocation node in that space. In such event, the incumbent LEC shall not charge the requesting telecommunications carrier any proportionate, pro rata, or any other form of conditioning, room preparation, or other space preparation fees. The incumbent LEC shall construct a collocation cage or cabinet around that space only upon the request of the requesting telecommunications carrier. In the event the incumbent LEC does not believe that enough suitable, already-conditioned or prepared floor space is available, it shall, within five (5) days, notify the requesting telecommunications carrier of that belief, and the procedures of Section 51.321(e) shall apply to any dispute between the requesting telecommunications carrier and the incumbent LEC on this subject.

(7) In the event the incumbent LEC is required to condition or otherwise prepare additional floor space in response to a particular request for physical collocation, it may only charge the requesting telecommunications carrier the pro-rata share of conditioning costs associated with the amount of space requested;

(8) An incumbent LEC may retain a limited amount of floor space for its own specific future uses, provided, however, that the incumbent LEC may not reserve space for future uses on terms more favorable than those that apply to other telecommunications carriers seeking to reserve collocation space for their own future use. In no event shall any incumbent LEC reserve more than three bays of space for longer than three months for itself or for any other entity. In the event an incumbent LEC retains a limited amount of floor space for its own specific future uses, it shall file every six (6) months with the appropriate state commission: (i) a list of its premises where it has exercised its rights pursuant to this subsection; (ii) the amount and location of floor space it has retained in each of these premises; (iii) a description of the specific future use for which the incumbent LEC has retained said space; and (iv) a detailed floor plan or diagram of the particular incumbent LEC premises. Subject to an appropriate protective order, these filings shall be served upon any requesting telecommunications carrier that has applied for physical collocation in that particular LEC premises in the past six (6) months and upon all entities that have established a collocation node at that particular premises. Other requesting telecommunications carriers may obtain copies of these filings subject to an appropriate protective order;

(9) An incumbent LEC shall relinquish any space held for future use pursuant to this subsection before denying any request or application for physical collocation on the grounds of space limitations, unless the incumbent LEC

proves to the state commission pursuant to Section 51.321(e) of these Rules that physical collocation at that point is not technically feasible; and

(10) An incumbent LEC may impose reasonable restrictions on the warehousing of unused space by collocating telecommunications carriers, provided, however, that the incumbent LEC shall not set maximum space limitations applicable to such carriers unless the incumbent LEC proves to the state commission that space constraints make such restrictions necessary with respect to particular premises.

* * *

(i) With regard to all forms of physical collocation, an incumbent LEC may, at its own expense and without subjecting the requesting telecommunications carrier to any delay in obtaining collocation space, require reasonable and nondiscriminatory security arrangements. Reasonable security arrangements may include security escorts, background checks, key card entry systems, video surveillance systems, equipment cabinets or lockers and alarms. These security arrangements shall not, however, be any more stringent or limiting than similar security arrangements that the incumbent LEC maintains at its premises for its own employees or employees of authorized contractors with access to similar incumbent LEC premises. Incumbent LECs may require requesting telecommunications carriers to install, maintain or repair equipment collocated pursuant to cageless physical collocation (as defined in this section) pursuant to nondiscriminatory "safe-time" work policies, if the incumbent LEC utilizes the same policies for installation, maintenance or repair of its own telecommunications equipment. Evidence that the incumbent LEC requires more stringent or different security arrangements or work policies upon collocated telecommunications carriers than it requires for its own employees or employees of authorized contractors with access to similar incumbent LEC premises shall be *prima facie* evidence of discrimination and a violation of this rule and may be addressed by the Commission's enforcement procedures. In no event shall an incumbent LEC, based on security or any other concern, refuse to provide or delay the provision of any form of physical collocation (including cageless physical collocation) to a requesting telecommunications carrier. In no event shall an incumbent LEC, based on security or any other concern, require a requesting telecommunications carrier to pay for or await space, floor or room conditioning work if already-conditioned space is available within or upon the premises on a single-bay increment. In no event shall an incumbent LEC's security arrangements or other policies unduly restrict or hinder the ability of the requesting telecommunications carrier to maintain a high level of customer service, including, but not limited to, security arrangements that would unduly limit, restrict or effectively prohibit the ability of a requesting telecommunications carrier to repair collocated telecommunications

equipment at any time to correct as soon as possible a service outage or service impairment.

(j) An incumbent LEC shall permit a requesting telecommunications carrier to subcontract all work associated with the provision of any form of physical collocation, including, but not limited to the room, floor or space conditioning or preparation (e.g., HVAC, asbestos removal, etc.) with contractors approved by the incumbent LEC; provided, however, that the incumbent LEC shall not unreasonably withhold approval of contractors. Approval by an incumbent LEC shall occur within thirty (30) days of application to the incumbent LEC and shall be based on the same criteria it uses in approving contractors for its own purposes.

(k) Within six months of the effective date of these rules, all incumbent LECs shall create, maintain and make available (upon request and posted on the Internet) a report of the collocation space availability status in each of their central offices, wire centers, or comparable facilities. This report shall include the following information for each premises: (i) address, town and state; (ii) CLLI code; (iii) number of entities with established physical collocation arrangements; (iv) number of entities with established virtual collocation arrangements; (v) total amount of floor space supporting physical collocation arrangements; (vi) amount of already-conditioned floor space (listed in bays) available for collocation; (vii) all forms of physical collocation (including, but not limited to cageless and CEV) and virtual collocation that are available on the premises; (viii) amount of floor space being retained by the incumbent LEC for future specific uses pursuant to subsection (f); (ix) amount of floor space devoted to collocation arrangements that are currently in process; and (x) measures the incumbent LEC is taking to comply with Section 51.323 of these Rules and make additional space available for physical collocation. The incumbent LEC shall update this report every six months and whenever the incumbent LEC installs, replaces, retires or removes equipment from the premises.

(l) Except as explicitly provided in this part, all disputes related to the rates, terms and conditions of all forms of physical and virtual collocation shall be resolved by application or complaint to the Commission.

47 C.F.R. § 51.319 (Specific unbundling requirements)

§ 51.319 Specific unbundling requirements, is amended by replacing subsection (a) as follows and adding subsection (h) as follows—

(a) *Local Loop.* The local loop network element is defined as the total features, functions and capabilities of an incumbent LEC's transmission facility between a distribution frame (or its equivalent) in an incumbent LEC central office and an end user customer premises. The provision of a local loop by an incumbent LEC may involve the conditioning or modification of that facility to support analog (by, *inter alia*, insertion of analog load coils and repeaters and removal of any digital repeaters and certain digital line cards along the path of the transmission facility), ISDN (by, *inter alia*, insertion of appropriate digital line cards and digital repeaters and removal of any excessive bridge taps, analog load coils and unsuitable repeaters along the path of the transmission facility), or xDSL services (by, *inter alia*, insertion of appropriate digital line cards and digital repeaters and removal of any excessive bridge taps, analog load coils and unsuitable repeaters along the path of the transmission facility). The requesting telecommunications carrier shall choose whether it is to be provided an analog-conditioned, ISDN-conditioned, or xDSL-conditioned unbundled local loop. A requesting telecommunications carrier may use any of the features, functions and capabilities of an unbundled local loop in any manner to support any telecommunications service that it seeks to offer. An unbundled local loop may be used by a requesting telecommunications carrier for any purpose or service consistent with these Rules and the Act. The requesting telecommunications carrier may request any technically feasible unbundling of a local loop capable of supporting DSL services including, but not limited to, the methods described in this subsection. Provision of a local loop capable of supporting DSL services by an incumbent LEC is presumed to be technically feasible if the incumbent LEC is capable of providing DSL services over that loop. In any dispute regarding the technical feasibility of any one method of unbundling a local loop capable of supporting DSL services, the incumbent LEC bears the burden of demonstrating to the Commission with clear and convincing evidence that it is not technically feasible to provide requesting telecommunications carriers with such an unbundled local loop in the requested manner.

(1) Where the transmission facility is comprised solely of twisted copper pair(s), an incumbent LEC shall make such facility available to a requesting telecommunications carrier within ten (10) days of the initial request, regardless of whether the requesting telecommunications carrier has requested an analog-conditioned, ISDN-conditioned, or xDSL-conditioned unbundled local loop.

(2) Where the transmission facility includes a digital loop carrier component, then, at the option of the requesting telecommunications carrier, the incumbent LEC shall, inform requesting telecommunications carrier of this condition and provide the requesting carrier with the following options:

(i) If the requisite copper facilities exist between the remote terminal associated with the digital loop carrier and the serving central office (or functional equivalent), provide a transmission facility comprised solely of twisted copper pair(s) within ten (10) days of the initial request, conditioned at the request of the requesting carrier to support analog, ISDN or xDSL services;

(ii) If the requisite copper facilities between the remote terminal associated with the digital loop carrier and the serving central office (or functional equivalent) does not exist, provide a transmission facility comprised solely of twisted copper pair(s) within ten (10) days of the initial request, conditioned at the request of the requesting carrier to support analog, ISDN, or xDSL services;

(iii) If the digital loop carrier component supports ISDN or similar digital services, provision the local loop to support DSL services within ten (10) days of the initial request by conditioning the loop to support DSL services and by installation at the remote terminal of an appropriate line card of the requesting carrier's choosing or provided directly by the requested carrier to the incumbent LEC; and

(iv) Any other technically feasible method of obtaining a loop capable of supporting DSL services requested by the requesting telecommunications carrier.

(3) Next Generation DSLAMs

(i) Six months [from the effective date of this order] and every six months thereafter until the Chief of the Common Carrier Bureau determines otherwise, every incumbent LEC serving over 2 percent of the nation's total access lines shall file a report with the Common Carrier Bureau detailing the availability and functionality of Digital Subscriber Line Access Multiplexers ("DSLAMs") capable of being located in remote terminals within the incumbent LEC's territory and associated central office equipment (such as ATM cross-connects) in order that the Chief of the Common Carrier Bureau might assess the availability, functionality, and cost, of remote DSLAMs and associated central office equipment capable of supporting multiple technical implementations of digital subscriber line services (such as ADSL, SDSL, VDSL, HDSL). Other telecommunications carriers and interested parties (such as equipment providers) may file comparable reports and comments on the reports of any incumbent LEC.

(ii) At such time as the Chief of the Common Carrier Bureau determines that multi-functional remote DSLAMs are reasonably

available for deployment, every incumbent LEC serving over 2 percent of the nation's access lines shall, within two months, submit a plan detailing how it will install such equipment in existing digital loop carrier systems within five years and in all digital loop carrier systems installed after three months from the date of the determination.

(4) *Avoidance of Harmful Interference*. Telecommunications carriers providing digital subscriber line service will coordinate fully under the auspices of the Chief, Common Carrier Bureau to avoid the occurrence of harmful interference in the provision of digital subscriber line services. The presence of interference shall not be used by an incumbent LEC as a reason for refusing to provide, or to cease the provision of, any local loop network element to any requesting telecommunications carrier.

(5) *Subloop Unbundling*

(i) The local loop network element shall be further unbundled in the provisioning of digital subscriber line services in order to provide a requesting telecommunications carrier with interconnection and collocation at remote terminals. The minimum space and size requirements for physical collocation shall not apply to remote terminals.

(ii) An incumbent LEC shall make space available within and around its own remote terminals on a first-come, first-served basis, however, where space has been exhausted or does not exist, an incumbent LEC shall construct, upon request, on a documented reimbursable basis, facilities within its existing rights of way to effectuate interconnection and collocation at a remote terminal.

* * *

(h) *DS3 Link.* The DS3 Link element is defined as the provision of a the full features, functions and capabilities of a two-point, 45 Mbps digital channel between a customer premises and the point of premises (POP), collocation node, or other office of the requesting telecommunications carrier, or between a customer premises and the POP, collocation node or other office of an authorized agent of the requesting telecommunications carrier. A requesting telecommunications carrier may use any of the features, functions and capabilities of an unbundled DS3 Link in any manner to support any telecommunications service that it seeks to offer.